MELSEC A Series

Programmable Logic Controllers

User's Manual

CCLink System Master/Local Interface A80BDE-J61BT13

Art. no.: 136226
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• SAFETY PRECAUTIONS •

(Be sure to read these instructions before using the product.)

Before using this product, read this manual and the relevant manuals introduced in this manual carefully and handle the product correctly with full attention to safety.
Note that these precautions apply only to this product. Refer to the user's manual of the CPU module for the PLC system safety precautions.
In this manual, the safety instructions are ranked as "DANGER" and "CAUTION".

⚠ DANGER	Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.
⚠ CAUTION	Indicates that incorrect handling may cause hazardous conditions, resulting in minor or moderate injury or property damage.

Note that failure to observe the ⚠CAUTION level instructions may also lead to serious results depending on the circumstances.
Be sure to observe the instructions of both levels to ensure personal safety.
Please keep this manual in accessible place and be sure to forward it to the end user.

[DESIGN PRECAUTIONS]

⚠ DANGER

- When there is a communication error in the data link, the station where the communication is occurring changes to the following status.
  Construct an interlock circuit in the sequence program so that the system will operate on the safety side using the communication status information.
  There is the risk of an accident occurring due to output error or malfunctioning.
  (1) All general purpose inputs from this CC-Link board (A80BDE-J61BT13) are turned off.
  (2) All general purpose outputs from this CC-Link board are turned off.
- A failure in the CC-Link board may cause I/O to change to on status or off status.
  Establish a circuit to be observed externally for those I/O signals that may threaten to cause serious accident.

⚠ CAUTION

- Do not bunch the control wires or communication cables with the main circuit or power wires, or install them close to each other.
  They should be installed 100 mm (3.9 inch) or more from each other.
  Not doing so could result in noise that would cause malfunction.

[INSTALLATION PRECAUTIONS]

⚠ CAUTION

- Use the CC-Link board in an environment as described in the general specifications listed in this operating manual.
  If the board is used in an environment outside the ranges described in the general specifications, it may result in an electric shock, fire, malfunctioning, damage to or deterioration of the product.
- Do not directly touch the conductive area of the CC-Link board.
  This will result in malfunctioning or failure of the CC-Link board.
- Fix the CC-Link board securely with the installation screws and tighten the installation screws within the specified torque range.
  If the screws are loose, this will lead to an error in operation.
  If the screws are tightened too much, this will damage the screws and cause a short.
- Always make sure to touch the grounded metal to discharge the electricity charged in the body, etc., before touching the CC-Link board.
  Failure to do so may cause a failure or malfunctions of the CC-Link board.

[WIRING PRECAUTIONS]

⚠ DANGER

- Always turn off all external power before performing installation, wiring or other work.
  If all power is not turned off, there is a risk of electric shock, damage to the product, or malfunctioning.
- When turning on the power and operating the module after installation and wiring are completed, always attach the terminal cover that comes with the product.
  There is a risk of electric shock if the terminal cover is not attached.

⚠ CAUTION

- Always ground the FG terminal on the PC side using D type grounding (Class 3 grounding) or higher specifically for the PC. Otherwise, there is a risk of malfunctioning.
  If a malfunctioning occurs even when the PC unit is grounded, ground both the FG terminal for the PC unit and the SLD terminal for the CC-Link board.
- Tighten the terminal screws within the specified torque range.
  If the terminal screws are loose, this will lead to a short or malfunctioning.
  If the terminal screws are tightened too much, this will damage the screws and CC-Link board, causing a short or malfunctioning.
- Take care that foreign objects such as chips or wiring debris do not get inside the CC-Link board.
  This can result in fire, failure or malfunctioning.

⚠ CAUTION

- Always house the communication cable and power cable connected to the CC-Link board in a duct or secure it using clamps.
  If the cables are not housed in a duct or secured with clamps, the cable may dangle, move or be pulled inadvertently. This can cause damage to the CC-Link board or cable, or create a faulty contact with the cable which may lead to.
- When disconnecting the communication or power cable connected to the CC-Link board, do not grasp and pull the cable.
  First loosen the screws where the cable is connected to the CC-Link board and then remove the cable.
  If the cable is pulled while it is connected to the CC-Link board, this can cause damage to the CC-Link board or cable, or create a faulty contact with the cable and lead to malfunctioning.

[STARTING AND MAINTENANCE PRECAUTIONS]

⚠ DANGER

- Do not touch the terminal when the power is turned on.
  This can cause malfunctioning.
- Always turn off all external power before doing any cleaning or re-tightening the terminal screws.
  If all power is not turned off, this can cause a failure or malfunctioning of the CC-Link board.
  If the screws are loose, this can cause the terminal to drop, short or operate in error.
  If the screws are tightened too much, this can damage the screws and CC-Link board, causing the terminal to drop, short or operate in error.

⚠ CAUTION

- Do not dismantle or rebuild the CC-Link board.
  This will result in breakdowns, malfunctioning, injury or fire.
  Not doing so may cause an electric shock or malfunction.
- Always turn off all external power before installing or removing the CC-Link board.
  If all power is not turned off, this will result in failure of the CC-Link board or malfunctioning.
- Always make sure to touch the grounded metal to discharge the electricity charged in the body, etc., before touching the CC-Link board.
  Failure to do so may cause a failure or malfunctions of the CC-Link board.

[DISPOSAL PRECAUTION]

⚠ CAUTION

- When disposing of this product, treat it as industrial waste.

REVISIONS

* The manual number is given on the bottom left of the back cover.

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Japanese Manual Version IB-0800173-D

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Precautions for use

(1) When Microsoft® Windows® XP Professional Operating System, Microsoft® Windows® 2000 Professional Operating System or Microsoft® Windows NT® Workstation Operating System Version 4.0 is used

When Windows® XP Professional, Windows® 2000 Professional or Windows NT® Workstation 4.0 is used, installation and use of utility are allowed only with the Administrator authority.

(2) When Windows® XP Professional or Windows® 2000 Professional is used

When Windows® XP Professional or Windows® 2000 Professional is used, only Microsoft® Visual Basic® 6.0 and Microsoft® Visual C++® 6.0 can be used as the programming languages.

Neither Microsoft® Visual Basic® 5.0 nor Microsoft® Visual C++® 5.0 can be used.

(3) Multi-thread communication

Multi-thread communication is not supported.

(4) Installation

Install the SW4DNF-CCLINK-B after uninstalling SWnDNF-CCLINK.

(5) Overwrite installation

When performing an overwrite installation, install in the same folder where the previous program is installed.

(6) Start menu

When the software package is uninstalled, items may remain in the start menu.

In this case, reboot the computer.

(7) Software version of the CC-Link master and local modules

For the CC-Link master and local modules, use software version "N" or later.

A module running software version "M" or earlier will not run properly.

(8) CC-Link board ROM version

When connecting to the QCPU (Q mode), be sure to use a CC-Link board whose ROM version is "W" or later.

The system will not operate correctly if a CC-Link board of "V" or older ROM version is used.

(9) Multiprocessor PC

Multiprocessor PCs cannot be used because they are not supported by the driver.

(10) Accessing the CN device for the FXCPU

CN devices for the FXCPU with numbers 200 or after cannot be accessed (read, write).

INTRODUCTION

Thank you for purchasing the Type A80BDE-J61BT13 Control & Communication Link System Local Interface Board.
Before using the equipment, please read this manual carefully to develop full familiarity with the functions and performance of the Type A80BDE-J61BT13 Control & Communication Link System Local Interface Board you have purchased, so as to ensure correct use.
Please forward a copy of this manual to the end user.

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Manuals

The following table list the manuals relevant to this product.
You can order them as necessary.

Relevant Manuals

Manual Name	Manual Number (Type Code)
Control & Communication Link System Master/ Local type AJ61BT11/A1SJ61BT11 User's Manual This manual explains the system configuration, performance specifications, functions, handling, wiring and troubleshooting for the AJ61BT11 and A1SJ61BT11. (Sold separately)	IB-66721 (13J872)
Control & Communication Link System Master/Local Module type AJ61QBT11/A1SJ61QBT11 User's Manual This manual explains the system configuration, performance specifications, functions, handling, wiring and troubleshooting for the AJ61QBT11 and A1SJ61QBT11. (Sold separately)	IB-66722 (13J873)
Control & Communication Link System Master/Local Module type QJ61BT11 User's Manual This manual explains the system configuration, performance specifications, functions, handling, wiring and troubleshooting for the QJ61BT11. (Sold separately)	SH-080016 (13JL91)

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How to Read the Manual

"How to Read the Manual" is listed according to the objective when using the CC-Link board.
Refer to the following when using this manual.

(1) To learn about the features of the CC-Link board (Section 1.1)
The features are described in Section 1.1.

(2) To learn about compatibility with existing software (Section 1.2)
Compatibility with existing software is described in Section 1.2.

(3) To learn about the correspondence to the EMC command (Chapter 2)
Correspondence to the EMC command is described in Chapter 2.

(4) To learn about the system configuration (Section 3.1 to Section 3.2)
Configuration of a system using the CC-Link board is described.

(5) To learn about the operating environment for the CC-Link board (Section 3.3)
The operating environment for the CC-Link board is described in Section 3.3.

(6) To learn about specifications and functions for the CC-Link board (Chapter 4)
The specifications and functions for the CC-Link board are described in Chapter 4.

(7) To learn about CC-Link board settings (Chapter 5)
CC-Link board settings are described in Chapter 5.

(8) When installing or uninstalling a software package (Chapter 6)
How to install and uninstall a software packaged is described in Chapter 6.

(9) To learn about utilities operating procedure (Chapter 7)
The operating procedure for utilities is described in Chapter 7.

(10) To learn about devices that can be accessed and range of access (Chapter 8)
Device specifications and contents stored in the system-area information are described in Chapter 8.

(11) To learn about how to use functions (Chapter 9)
How to use functions is described in Chapter 9.

(12) To learn about error contents (Chapter 10)
The contents of errors is described in Chapter 10.

(13) To learn about the actions to take when the system does not run (Chapter 11)
How to troubleshoot is described in Chapter 11.

Generic Terms and Abbreviations

Unless specifically noted, this manual uses the abbreviations and generic terms listed below to explain the Type A80BDE-J61BT13 Control & Communication Link System local interface boards.

Abbreviation/generic term	Description of the abbreviation/generic term
CC-Link	Abbreviation for the Control & Communication Link system.
CC-Link board	Abbreviation for the Type A80BDE-J61BT13 Control & Communication Link System local interface board.
IBM PC/AT compatible PC	An IBM PC/AT compatible PC.
AnNCPU	Generic term for A0J2HCPU, A1SCPU, A1SCPU-S1, A1SCPUC24-R2, A1SHCPU, A1SJCPU, A1SJCPU-S3, A1SJHCPU, A1SJHCPU-S8, A1NCPU, A2CCPU, A2CCPUC24, A2CCPUC24-PRF, A2CJCPU, A2NCPU, A2NCPU-S1, A2SCPU, A2SCPU-S1, A2SHCPU, A2SHCPU-S1 and A1FXCPU.
AnACPU	Generic term for A2ACPU, A2ACPU-S1, A2ACPUP21/R21, A2ACPUP21/R21-S1, A3ACPUP21/R21, A3NCPU and A3ACPU.
AnUCPU	Generic term for A2UCPU, A2UCPU-S1, A2ASCPU, A2ASCPU-S1, A2ASCPU-S30, A2USHCPU-S1, A3UCPU and A4UCPU.
QnACPU	Generic term for Q2ACPU, Q2ACPU-S1, Q2ASCPU, Q2ASCPU-S1, Q2ASHCPU, Q2ASHCPU-S1, Q3ACPU, Q4ACPU and Q4ARCPU.
ACPU	Generic term for AnNCPU, AnACPU and AnUCPU.
QCPU (A mode)	Generic term for Q02CPU-A, Q02HCPU-A and Q06HCPU-A
QCPU (Q mode)	Generic term for Q00JCPU, Q00CPU, Q01CPU, Q02CPU, Q02HCPU, Q06HCPU, Q12HCPU, Q25HCPU, Q12PHCPU and Q25PHCPU. Note that especially when the CPU is indicated as a different model, Q00JCPU, Q00CPU and Q01CPU are described as Q00J/Q00/Q01CPU, and Q02CPU, Q02HCPU, Q06HCPU, Q12HCPU and Q25HCPU as Q02/Q02H/Q06H/Q12H/ Q25HCPU. In addition, Q12PHCPU and Q25PHCPU are described as the Process CPU.
Master station	The station controlling the remote station, local station and intelligent device station.
Local station	A station that has a CPU and can communicate with the master station and local station.
Remote I/O station	A remote station that can only handle bit information. (AJ65BTB□-□□, AJ65BTC□-□□)
Remote station	Generic term for the remote I/O station and remote device station.
Intelligent device station	A slave station such as the AJ65BT-R2 in the CC-Link system that can perform transient transmission.
Master and local modules	Generic term for the AJ61QBT11, A1SJ61QBT11, AJ61BT11, A1SJ61BT11 and QJ61BT11.
Master module	Generic term when the AJ61QBT11, A1SJ61QBT11, AJ61BT11, A1SJ61BT11 and QJ61BT11 are used as master stations.
Remote module	Generic term for AJ65BTB □-□□, AJ65BTC □-□□, AJ65BT-64AD, AJ65BT-64DAV, AJ65BT-64DAI, A852GOT, etc.
Intelligent module	A module such as the AJ65BT-R2 that can perform transient transmission.
Cyclic transmission	Function that periodically updates the contents of the remote I/O and remote register.
Transient transmission	Function that communicates data to the specified station when there is an access request from the PLC CPU.
SB	Link special relay
SW	Link special register
RX	Remote input
RY	Remote output
RWw	Remote register (write area)
RWr	Remote register (read area)

Product List

The product list for the CC-Link board is given in the table below.

Product name	Quantity
A80BDE-J61BT13 Control & Communication Link System local interface board	1
SW4DNF-CCLINK-B model CC-Link software package	1 (Floppy disks; set of 6)
Type A80BDE-J61BT13 Control & Communication Link System local interface board user's manual (this manual)	1
Software use agreement	1

Note

The terminal resistor is packaged with the CC-Link system master and local modules.

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1 OVERVIEW

CC-Link is an abbreviation for Control & Communication Link. Hereinafter abbreviated as CC-Link in this manual.
This manual explains the specifications for, and how to handle and monitor the Type A80BDE-J61BT13 Control & Communication Link System local interface board (hereinafter abbreviated as CC-Link board) that is included in the CC-Link system, and loaded as an optional board in the PCI bus of an IBM PC/AT compatible PC.

The A80BDE-J61BT13 is applicable to the following CC-Link system.

- Applicable to the CC-Link system local station(s).

1.1 Features

The I/F board has the features described below.

(1) An IBM PC/AT compatible PC can be built into the CC-Link system.
The I/F board can be installed in an IBM PC/AT compatible PC and that PC can be used as a local station.

(2) Using a PCI bus eliminates troublesome switch settings.
Simply installing the board in the PCI bus automatically executes initial setting.

(3) Displays test and monitor information related to the CC-Link.
Operation becomes easy since the CC-Link system testing and monitoring statuses can be displayed in the IBM PC/AT compatible PC.

(4) Various functions are available to accommodate user programming.
By using various functions that are compatible with Microsoft® Visual C++® and Microsoft® Visual Basic® , user applications to perform remote control for the PLC CPU as well as reading from and writing to devices can easily be created.

(5) Drivers for various operating systems are available.
A variety of drivers are provided to make it easier to construct a system that is compatible with the user's environment.
Compatible operating systems :
Microsoft® Windows® 95 Operating System (English Version)
Microsoft® Windows® 98 Operating System (English Version)
Microsoft® Windows NT® Workstation Operating System Version 4.0 (English Version)
Microsoft® Windows® 2000 Professional Operating System (English Version)
Microsoft® Windows® XP Professional Operating System (English Version)

(6) Support for QCPUs (Q mode) of a multiple PLC system
By specifying the station number of the logical station number via the CC-Link utility, communication with each QCPU (Q mode) of a multiple PLC system can be performed.

1.2 Combinations of Boards with Existing Software

This section describes the combinations of boards with existing software.

(1) When using the CC-Link board and other interface boards in the same PC

Board model name	Software package name	Supported OS								
		DOS	NT 3.51	Win 95	Win 98	Win Me	NT 4.0	Win 2000	XP Pro	XP Home
Q80BD-J71LP21-25 Q80BD-J71LP21G Q80BD-J71LP21GE Q80BD-J71BR11	SW0DNC-MNETH-B	×	×	○	○	×	○	○	○ ＊2	×
A70BDE-J71QLP23 A70BDE-J71QLP23GE A70BDE-J71QBR13	SW0IVDWT-MNET10P	○	○	×	×	×	×	×	×	×
	SW1IVDWT-MNET10P	○	○	○ ＊1	○	×	○ ＊1	×	×	×
	SW2DNF-MNET10	○	×	○	○	×	○	×	×	×
	SW3DNF-MNET10	○	×	○	○	×	○	×	×	×
A70BDE-J71QLR23	SW3DNF-MNET10	○	×	○	○	×	○	×	×	×
A80BDE-J61BT11	SW3DNF-CCLINK	×	×	○	○	×	○	×	×	×
	SW4DNF-CCLINK-B	×	×	○	○	×	○	○	○ ＊3	×
A80BDE-A2USH-S1	SW0DNF-ANU-B	×	×	×	×	×	○	×	×	×
	SW1DNF-ANU-B	×	×	×	×	×	○	○	×	×

DOS : MS-DOS 6.2　NT 3.51 : Windows NT® Workstation 3.51　Win 95 : Windows® 95　Win 98 : Windows® 98
Win Me: Windows® Me　NT 4.0 : Windows NT® Workstation 4.0　Win 2000 : Windows® 2000 Professional
XP Pro : Windows® XP Professional　XP Home : Windows® XP Home Edition
○ : Can be operated simultaneously.　× : Cannot be operated simultaneously.　— : No combination available

indicates an OS that is not supported by the CC-Link board. It cannot be used on the same PC.

＊1 : The user program EXE file that was generated using MDFUNC32.LIB must be re-linked using the MDFUNC32.LIB that comes with SW4DNF-CCLINK-B.
＊2 : Supports Windows® XP Professional from Version 70H or later.
＊3 : Supports Windows® XP Professional from Version 40E or later.

(2) When using the CC-Link board, Communication Support Software Tool and GX Developer in the same PC

Software name	Software package name	Supported OS								
		DOS	NT 3.51	Win 95	Win 98	Win Me	NT 4.0	Win 2000	XP Pro	XP Home
Communication Support Software Tool	SW1D5F-CSKP-E	×	×	△ *1	△ *1	×	△ *1	×	×	×
	SW2D5F-CSKP-E	×	×	○	○	×	○	×	×	×
	SW2D5F-OLEX-E	×	×	○	○	×	○	×	×	×
	SW2D5F-XMOP-E	×	×	○	○	×	○	×	×	×
	SW3D5F-CSKP-E	×	×	○	○	×	○	×	×	×
	SW3D5F-OLEX-E	×	×	○	○	×	○	×	×	×
	SW3D5F-XMOP-E	×	×	○	○	×	○	×	×	×
	SW0D5C-ACT-E	×	×	○	○	×	○	×	×	×
	SW2D5C-ACT-E	×	×	○	○	○	○	○	×	×
	SW3D5C-ACT-E	×	×	○	○	○	○	○	○	○
	SW1D5C-SHEET-E	×	×	×	○	○	○	○	○	○
GX Developer	SW2D5F-GPPW-E/ SW2D5C-GPPW-E	×	×	△	△ *2	×	△	×	×	×
	SW3D5F-GPPW-E/ SW3D5C-GPPW-E	×	×	○	○	×	○	×	×	×
	SW4D5C-GPPW-E	×	×	○	○	×	○	×	×	×
	SW5D5C-GPPW-E	×	×	○	○	×	○	×	×	×
	SW6D5C-GPPW-E	×	×	○	○	×	○	×	×	×
	SW7D5C-GPPW-E	×	×	○	○	○	○	○	×	×

DOS : MS-DOS 6.2 NT 3.51 : Windows NT® Workstation 3.51 Win 95 : Windows® 95 Win 98 : Windows® 98
Win Me: Windows® Me NT 4.0 : Windows NT® Workstation 4.0 Win 2000 : Windows® 2000 Professional
XP Pro : Windows® XP Professional XP Home : Windows® XP Home Edition
○ : Can be operated simultaneously. × : Cannot be operated simultaneously. — : No combination available
△ : Cannot access the CC-Link board, and cannot access other stations via the CC-Link board.

indicates an OS that is not supported by the CC-Link board. It cannot be used on the same PC.

*1 : Update the version of each software if it is used with the CC-Link board on the same PC.
For details on version update products, contact your local Mitsubishi service center or representative.
*2 : Supports Windows® 98 from Version 30D or later.

2 EMC COMMAND

2.1 Requirements for EMC Command Compliance

EMC commands, which are among the European command sets, are now enforced. The EMC commands regulate "emission (electromagnetic interference)," which requires that a device not emit strong electromagnetic waves externally, and "immunity (electromagnetic sensitivity)," which requires that a device have the ability to resist external electromagnetic waves.
The precautionary items when configuring a machine device using an CC-Link board to conform to EMC commands are described in sections 2.1.1 through 2.1.4.
Although we tried very hard to document these materials according to the requirements for regulation and the standards we have researched, the compatibility to the above commands of the entire device created according to the contents of this material, is not guaranteed. The methods to enable a device to conform to the commands and the compatibility must be determined by the manufacturer who produces the machine device.

2.1.1 EMC commands

The standards relating to EMC commands are listed in the table below:
With all test items, the standard has been tested with each device installed in an IBM PC/AT compatible PC bearing a CE certification logo.

Specification	Test item	Test description	Standard values
EN50081-2 : 1995	EN55011 Radiated noise	Measure the electric wave released by the product.	30 M-230 MHz QP : 50 dBμV/m (3 m measurement) *1 230 M-1000 MHz QP : 57 dBμV/m (3 m measurement)
	EN55011 Conduction noise	Measure the noise released by the product to the power line.	150 k-500 kHz QP: 79 dB, Mean: 66 dB *1 500 k-30 MHz QP: 73 dB, Mean: 60 dB
prEN50052-2 : 1991	IEC801-2 Static electricity immunity	Immunity test by applying static electricity to the unit enclosure.	4 kV contact discharge 8 kV air discharge
	IEC801-3 Radiated electromagnetic field	Immunity test by radiating an electric field to the product.	10 V/m, 27 - 500 MHz
	IEC801-4 First transient burst noise	Immunity test by applying burst noise to the power line and signal line.	2 kV
EN50082-2 : 1995	EN61000-4-2 Static electricity immunity	Immunity test by applying static electricity to the unit enclosure.	4 kV contact discharge 8 kV air discharge
	EN61000-4-4 First transient burst noise	Immunity test by applying burst noise to the power line and signal line.	2 kV
	ENV50140 Radiated electromagnetic field AM modulation	Immunity test by radiating an electric field to the product.	10 V/m, 80-1000 MHz, 80 % AM modulation@1 kHz
	ENV50204 Radiated electromagnetic field Pulse modulation	Immunity test by radiating an electric field to the product.	10 V/m, 900 MHz, 200 Hz pulse modulation, 50 % duty
	ENV50141 Conduction noise	Immunity test by inducting electromagnetic field to the power line and signal line.	10 Vrms, 0.15-80 MHz, 80 % AM modulation@1 kHz

*1 QP (Quasi-Peak) : Quasi-peak value, Mean: Average value

2.1.2 Installation on the control panel

Installing devices on the control panel has a considerable effect not only in securing safety but also in shutting down the noise generated from the PC by the control panel.

(1) Control panel

(a) Use an electrically conductive control panel.

(b) When fastening tightening the control panel's top or bottom panel with bolts, mask the coating so that surface contact is feasible.

(c) To ensure the electrical contact between the inside panel of the control panel and the main control panel, mask any coating around the installation bolts connecting to the main unit to secure conductivity in the largest surface area possible.

(d) Ground the control panel main unit using a thick ground cable so that a low impedance can be secured even with a high frequency.

(e) Make the holes on the control panel less than 10 cm (3.94 in.) in diameter. A hole larger than 10 cm (3.94 in.) may leak electric waves.

(2) Layout of power supply cable and ground cable

The layout of power supply cable and ground cable for a PC should be set as described below.

(a) Specify a grounding point that enables grounding of the control panel close to the power supply to the PC and ground the FG (frame ground) terminal of the PC or the SLD (shield) terminal of the CC-Link board using the thickest, shortest cable possible (about 30 cm (11.81 in.) or less in length). Since the FG and SLD terminals play a role in grounding the noise generated in the PC, it is necessary to ensure the lowest possible impedance. Because the power line is used to allow the noise to escape, it actually contains a great deal of noise. Therefore, shortening the wire length prevents the power line from becoming an antenna.

Note : A long conductive material can become an antenna that emits noise more efficiently.

(b) Twist the ground cable leading to the ground point with the power supply cable. By twisting them with the ground cable, the noise leaking out of the power supply cable may be grounded at a higher rate. However, when a noise filter is installed to the power supply cable, twisting with the ground cable may not be necessary.

2.1.3 Cable

Because the cable that runs from the control panel contains high frequency noise, outside the control panel it acts as an antenna and radiates noise. Always use shielded cable for cable that runs outside the control panel.
Except for certain models, using the ferrite core is not mandatory. However, the noise radiated via cable can be suppressed more effectively by mounting a ferrite core.
Using a shielded cable is also effective in raising noise resistance. The signal lines used for PLC input/output and special units are designed to ensure a noise resistance level of 2 kV (IEC801-4/EN61000-4-4) if a shielded cable is used. If a shielded cable is not used, or when a shielded cable is not grounded properly, the noise resistance will drop below 2 kV.

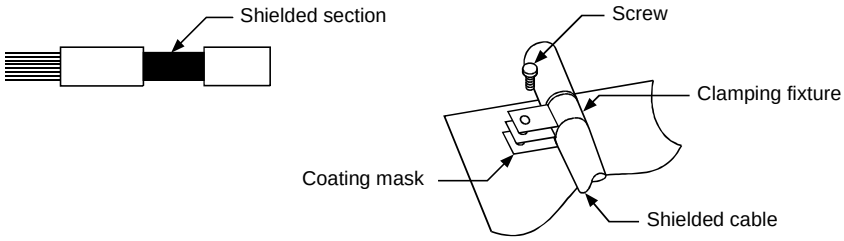
Note : With the EN50082-2, the noise resistance of each signal line is specified based on the application of the signal.
Signals related to control (process control) : 2 kV
Signals not related to control (process control)) : 1 kV

In the EN50082-2, the meaning of "(signals) related to control" is not defined. However, considering the original intent of the EMC command, the signal line that poses possible danger to person or equipment when the panel is incorrectly operated shall be defined as the "signal related to control," and high noise resistance is considered mandatory.

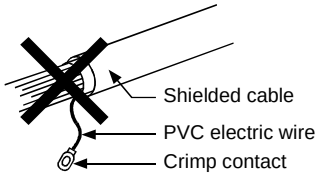
(1) Grounding treatment for shields

(a) Perform shielding processing at a position near the exit of the control panel. If the grounding point is far from the exit position, the cable portion after the grounding point will cause electromagnetic induction and generates high-frequency noise.

(b) Use a grounding method that allows the shield a surface grounding in a large area against the control panel. A clamping fixture as shown below may alternatively be used. When such a fixture is used, mask the coating in the area inside the control panel where the fixture contacts.

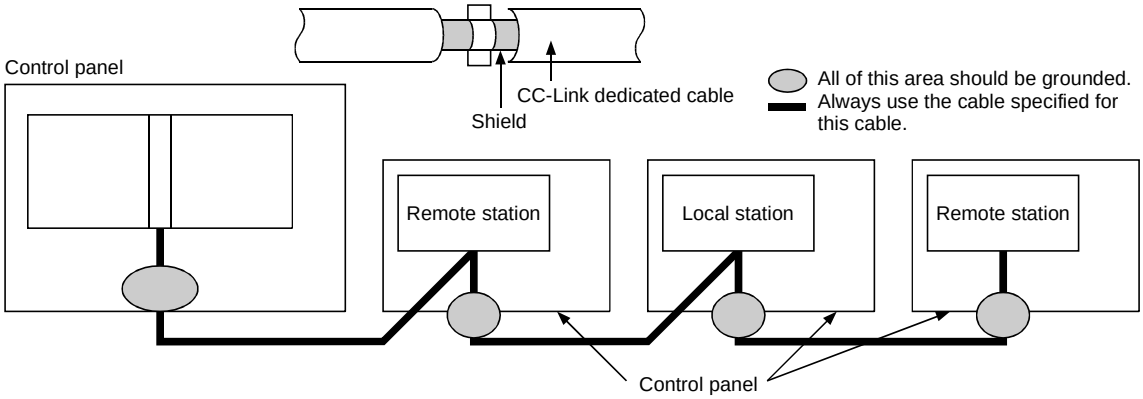


Note : The method shown below in which a PVC electric wire is soldered to the shield of the shielded cable and that end is grounded, increases the high frequency impedance and the effectiveness of the shield is lost.



(2) Grounding treatment for the CC-Link dedicated cable

(a) Always ground the twisted cable connected to the CC-Link master station, local station and remote station.
Since the twisted cable is a shielded cable, remove part of the outer sheath. Then ground the exposed part of the shield indicated in the figure below as wide a surface area as possible.

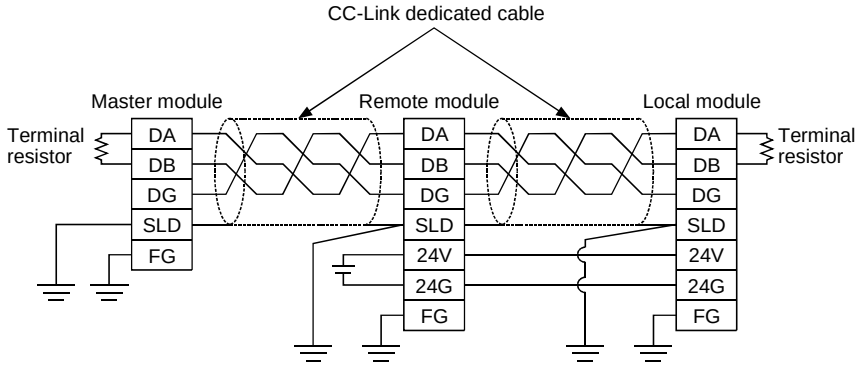


Also, ground within 30 cm (11.81.in.) from the board terminal area in addition to grounding at the position closest to the exit of the control panel.

(b) Always use the specified cable for the CC-Link dedicated cable.

(c) For each module, do not use a ferrite core for the CC-Link dedicated cable from the board.

(d) For each module, ground both the FG terminal and SLD terminal of the board.



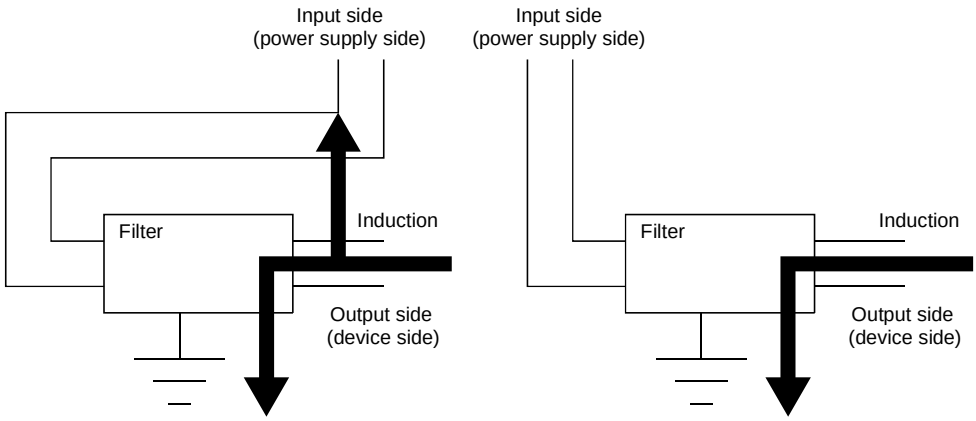
2.1.4 Noise filter (power supply line filter)

A noise filter is a part that has a considerable effect in preventing conductive noise. Except for a few models, installation of a noise filter to the power supply line is not mandatory. However, the installation of a noise filter can suppress noise at a higher rate (a noise filter is effective for reducing noise emitted in the range below 10MHz). Use a noise filter equivalent to the models shown below.

Model	FN343-3/01	FN660-6/06	ZHC2203-11
Manufacturer	SCHAFFNER	SCHAFFNER	TDK
Rated current	3 A	6 A	3 A
Rated voltage	250 V		

Precautions when installing a noise filter are noted below.

(1) Do not bundle the wiring on the input and output side of the noise filter. If they are bundled, noise on the output side will be inducted to the wiring on the input side where the noise has been removed by a filter.



(2) Ground the ground terminal for the noise filter to the control panel using as short wiring as possible (about 10 cm (3.94 in.)).

3 SYSTEM CONFIGURATION

The configuration for a system using the CC-Link board is explained below.

3.1 System Configuration for A80BDE-J61BT13

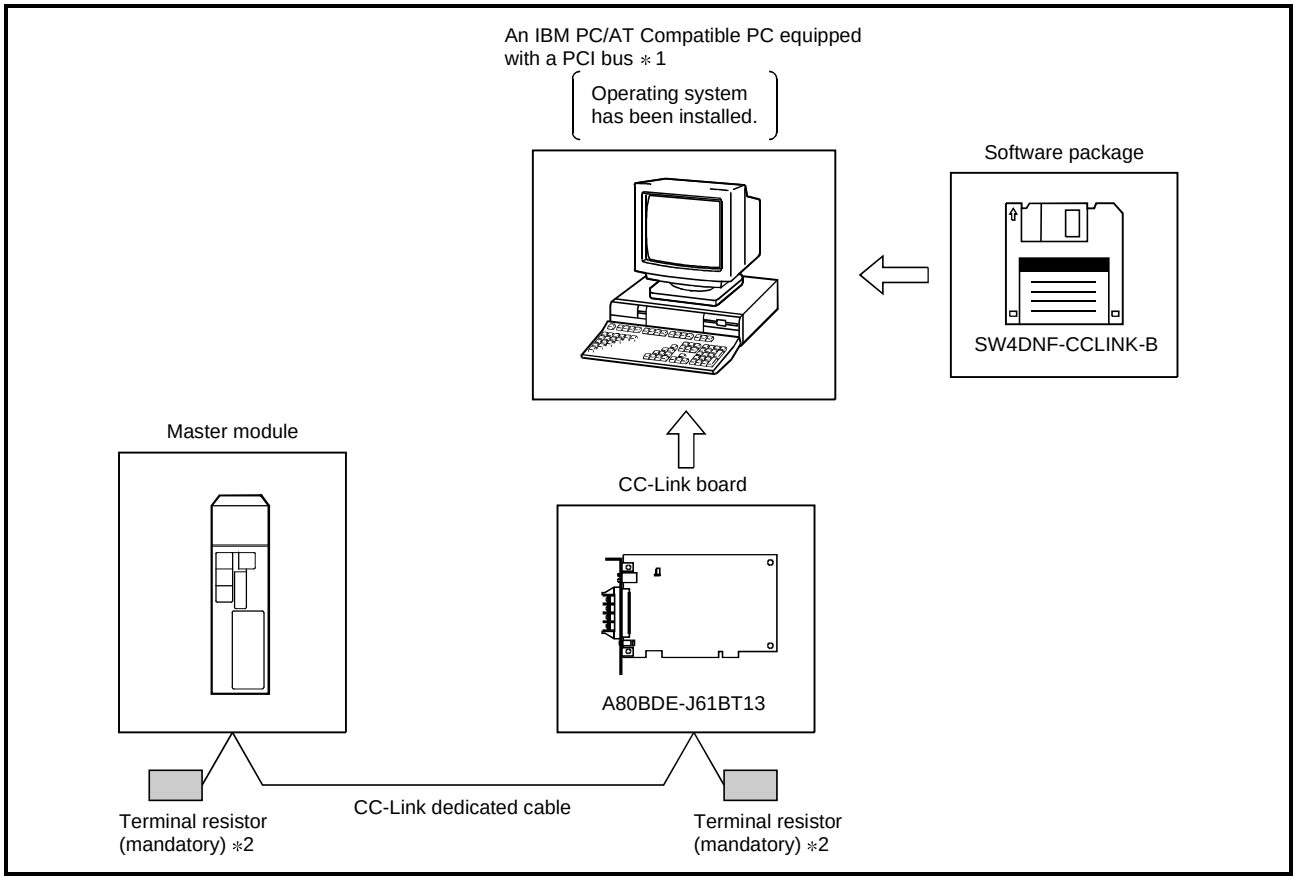
The following indicates the system configuration when an CC-Link board is used.
The CC-Link board can be connected to a maximum of up to 26 modules per 1 master station.
However, the following conditions must be fulfilled.

(1) $\{(1\times a)+(2\times b)+(3\times c)+(4\times d)\} \leq 64$

- a : Number of modules occupied by 1 station
- b : Number of modules occupied by 2 stations
- c : Number of modules occupied by 3 stations
- d : Number of modules occupied by 4 stations

(2) $\{(16\times A)+(54\times B)+(88\times C)\} \leq 2304$

- A : Number of remote I/O stations $\leq$ 64
- B : Number of remote device stations $\leq$ 42
- C : The number of local stations, standby master stations and intelligent device stations $\leq$ 26



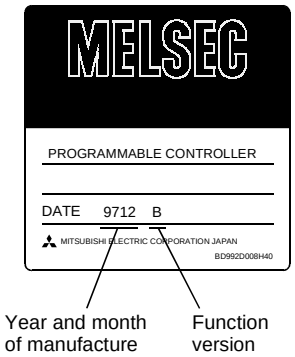
∗1 : A multiprocessor PC cannot be used, since the drivers are not compatible.
∗2 : The terminal resistor comes with the master module.

3.2 Applicable System

The CC-Link system master module which can use an CC-Link board is explained below.

The master module that can use an CC-Link board is the product with function version B or later and software version N or later.
The product with earlier versions than those listed above cannot use an CC-Link board.
The function version is recorded in the DATE column of the rated plate.

<Large type>



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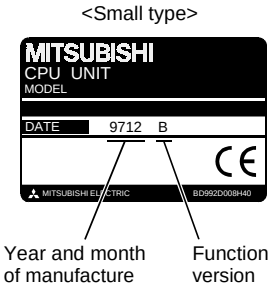
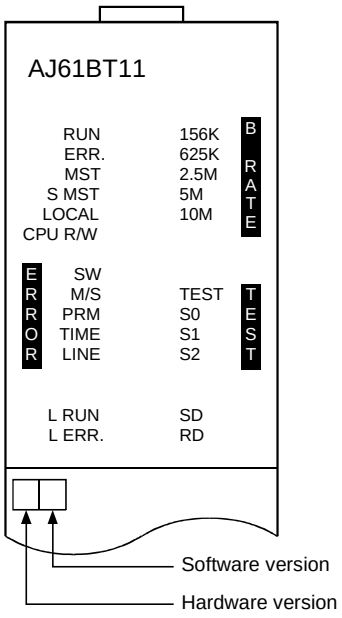
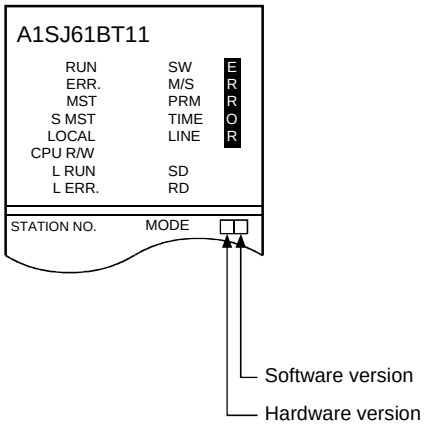


* The function version is noted only on products with version B or later.

The software version is indicated on the module version tag located on the front of the module.





3.3 About Ver. 1.10

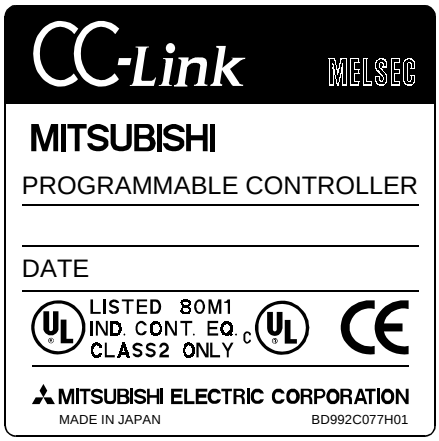
A product with a cable length of 20cm or longer between stations, which has been achieved by improving the restriction on the conventional cable distance between the stations, is defined as Ver. 1.10.
Whereas, the conventional product is defined as Ver. 1.00.
For the maximum total cable length for the Ver. 1.10 products, see Section 4.2.2.
The conditions requiring the cable length to be 20cm or longer between stations are as follows:

1) All the units comprising a CC-Link system must be of Ver. 1.10.
2) All the data link cables must be Ver. 1.10 compatible CC-Link dedicated cables.

POINT
If modules and cables of Ver. 1.00 and Ver. 1.10 are mixed in a system, the maximum total cable length and the cable length between stations will be as specified by Ver. 1.00. For the maximum total cable length and the cable length between stations for the Ver. 1.00 products, see Section 4.2.1.

(1) How to check Ver. 1.10

Ver. 1.10 compatible CC-Link boards and modules contain a “CC-Link” logo on the “board” or “rating name plate.”
(Example) Rating name plate of AJ61BT11



3.4 Operating Environment

The following table shows the operating environment for the CC-Link board.

Item		Description
Personal computer	CPU	IBM-PC/AT-compatible personal computer with one or more PCI bus slots, satisfying the specifications described below in "Applicable operating system and the corresponding required PC performance" ∗1.
	Required memory	
	PCI bus specifications	5V DC, 32-bit bus, Basic clock: 33MHz
Operating system		Microsoft® Windows® 95 Operating System (English version) Microsoft® Windows® 98 Operating System (English version) Microsoft® Windows NT® Workstation Operating System Version 4.0 (English version) ∗2 Microsoft® Windows® 2000 Professional Operating System (English version) Microsoft® Windows® XP Professional Operating System (English version) ∗3
Display		Resolution: 800×600 dot or higher (Recommended: 1024×768 dot) ∗4
Available hard disk space		15MB or more
Disk drive (required when installing the driver)		3.5 inch (1.44MB) floppy disk drive
Programming language ∗5, ∗6, ∗7		Microsoft® Visual Basic® 5.0 (English version), Microsoft® Visual Basic® 6.0 (English version), Microsoft® Visual C++® 5.0 (English version), Microsoft® Visual C++® 6.0 (English version)

∗1: This product does not work with a multiprocessor IBM-PC/AT-compatible personal computer, as the driver is incompatible.
∗2: Service Pack3 or higher is required when using Windows NT® Workstation 4.0.
∗3: Utilities do not work in XP compatibility mode.
∗4: This product does not comply with large-sized fonts when Windows® 2000 Professional or Windows® XP Professional is used.
∗5: User programs created in the English environment work only in the English environment.
∗6: Use Visual Basic® 6.0 or Visual C++® 6.0 when using Windows® 2000 Professional or Windows® XP Professional. (Visual Basic® 5.0 and Visual C++® 5.0 cannot be used.)
∗7: This product is not compatible with Microsoft® Visual Basic® .NET or Microsoft® Visual C++® .NET.

Applicable operating system and the corresponding required PC performance

Operating system	Description	
	CPU	Required memory
Windows® 95	Pentium® 133MHz or higher	32MB or more
Windows® 98	Pentium® 133MHz or higher	32MB or more
Windows NT® Workstation 4.0	Pentium® 133MHz or higher	32MB or more
Windows® 2000 Professional	Pentium® 133MHz or higher	64MB or more
Windows® XP Professional	Pentium® 300MHz or higher	128MB or more

4 SPECIFICATION

The performance specifications and functions of the CC-Link board are explained below.

4.1 General Specification

(1) The following table indicates general specifications of the CC-Link board.

Item	Specification					
Usage ambient temperature	0 to 55 °C					
Storage ambient temperature	-20 to 75 °C					
Usage ambient humidity	10 to 90 %RH, no condensation					
Storage ambient humidity	10 to 90 %RH, no condensation					
Vibration durability	Conforming to JIS B 3501, IEC 61131-2		Frequency	Acceleration	Amplitude	Sweep count
		When there is intermittent vibration	10 to 57 Hz	—	0.075 mm (0.0030 inch)	10 times in each direction X, Y, Z (80 minutes)
			57 to 150 Hz	9.8 m/s^2	—	
		When there is continuous vibration	10 to 57 Hz	—	0.035 mm (0.0013 inch)	
			57 to 150 Hz	4.9 m/s^2	—	
Shock durability	Conforming to JIS B 3501, IEC61131-2 (147 m/s^2, 3 times each in 3 directions)					
Usage environment	No corrosive gas					
Usage height	Less than 2000 m (less than 6562 ft.)					
Installation area	Within the control board					
Over-voltage category ＊1	Less than II					
Pollution level ＊2	Less than 2					

＊1 Indicates the location where the device is connected from the public cable network to the device structure wiring area.
Category II applies to the devices to which the power is supplied from a fixed equipment.
Surge withstand voltage for devices with up to 300 V of rated voltage is 2500 V.

＊2 This is an index which indicates the degree of conductive object generation in the environment Pollution level 2 is when only non-conductive pollution occurs.
A temporary conductivity caused by condensation must be expected occasionally.

(2) General specifications of the CC-Link board after it has been installed conform to the IBM PC/AT compatible PC unit.

4.2 Performance Specifications

The following table indicates the performance specifications for the CC-Link board.

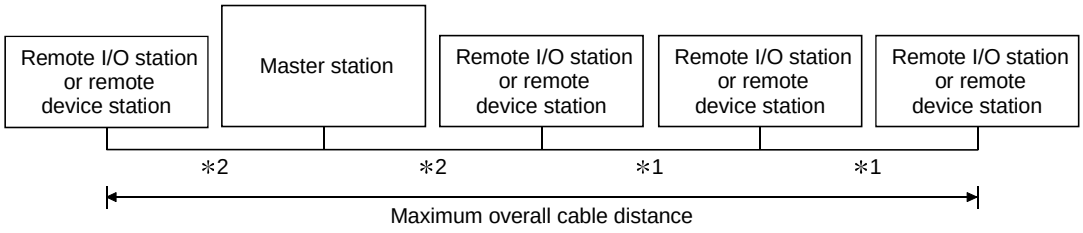
Item	Specification
Transmission speed	156 kbps, 625kbps, 2.5 Mbps, 5 Mbps or 10 Mbps can be selected
Maximum transmission distance	Differs depending on the transmission speed. (See Section 4.2.1, 4.2.3)
Number of occupied stations	1 or 4 station(s) (switches depending on the setting)
Maximum number of link points per 1 system	Remote I/O (RX, RY) : 2048 Remote registers (RWw) : 256 (master station to local station) Remote registers (RWr) : 256 (local station to master station)
Number of link points per 1 station	Remote I/O (RX, RY) : 30 Remote registers (RWw) : 4 (master station to local station) Remote registers (RWr) : 4 (local station to master station)
Communication method	Polling method
Synchronous method	Frame synchronous method
Encoding method	NRZI method
Transmission path	Bus (RS-485)
Transmission format	Conforms to HDLC
Error control system	CRC($X^{16}+X^{12}+X^5+1$)
Cable	CC-Link dedicated cable/ CC-Link dedicated high performance cable/ Ver. 1.10 corresponding CC-Link dedicated cable ＊1
RAS functions	• Automatic return function • Slave station separation function • Error detection using the link special relay and register • Data link status verification • OFF-line test (hardware test, line test) • Abnormal temperature detection • Watchdog timer error (WDT) detection
Number of boards that can be loaded	Maximum of 4 ＊2
Loading slot	IBM PC/AT compatible PC PCI bus slot
Number of slots occupied	1 slot
Internal voltage consumption (5 V DC)	0.4 A
Weight	0.16 kg

＊1: The CC-Link dedicated cable and CC-Link dedicated high performance cable cannot be used together.
＊2: This indicates the total number of A80BDE-J61BT11 and A80BDE-J61BT13 boards.

4.2.1 Maximum overall cable distance (for Ver. 1.00)

The relationship between the transmission speed and the maximum overall cable distance is described below:

(1) For a system consisting of only remote I/O stations and remote device stations



∗1 Cable length between remote I/O stations or remote device stations.
∗2 Cable length between the master station and the adjacent stations.

CC-Link dedicated cable (uses terminal resistor 110 Ω)

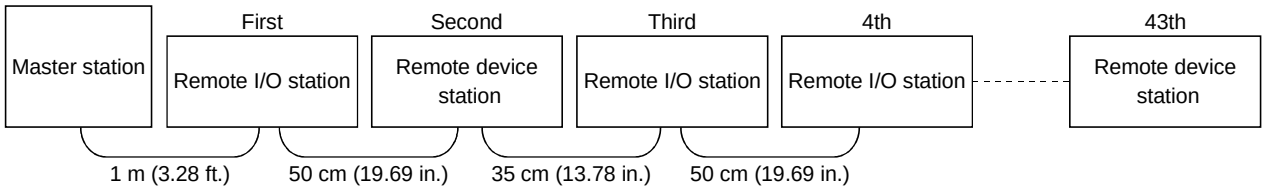
Transmission rate	Station-to-station cable length		Maximum overall cable distance
	∗1	∗2	
156 kbps	30 cm (11.81 in.) or more	1 m (3.28 ft.) or more	1200 m (3937.2 ft.)
625 kbps			600 m (1968.6 ft.)
2.5 Mbps			200 m (656.2 ft.)
5 Mbps	30 cm (11.81 in.) to 59 cm (23.23 in.) ∗		110 m (360.9 ft.)
	60 cm (23.62 in.) or more		150 m (492.15 ft.)
10 Mbps	30 cm (11.81 in.) to 59 cm (23.23 in.) ∗		50 m (164.1 ft.)
	60 cm (23.62 in.) to 99 cm (38.98 in.) ∗		80 m (262.5 ft.)
	1 m (3.28 ft.) or more		100 m (328.1 ft.)

CC-Link dedicated high performance cable (uses terminal resistor 130 Ω)

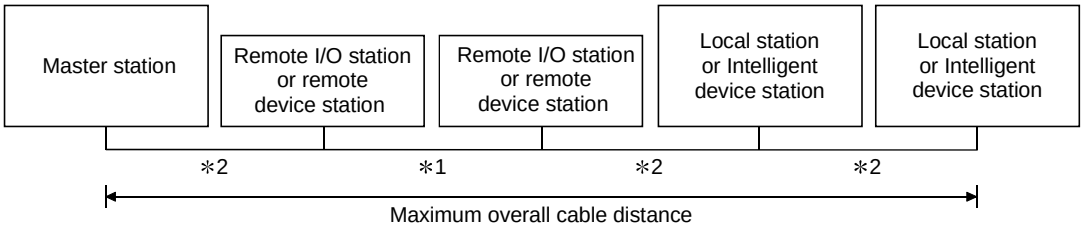
Transmission rate		Station-to-station cable length		Maximum overall cable distance
		∗1	∗2	
156 kbps		30 cm (11.81 in.) or more	1 m (3.28 ft.) or more	1200 m (3937.2 ft.)
625 kbps				900 m (2952.9 ft.)
2.5 Mbps				400 m (1312.4 ft.)
5 Mbps				160 m (524.96 ft.)
10 Mbps	Number of connected stations: 1 to 32			100 m (328.1 ft.)
	Number of connected stations: 33 to 48	30 cm (11.81 in.) to 39 cm (15.35 in.) ∗		80 m (262.5 ft.)
		40 cm (15.75 in.) or more		100 m (328.1 ft.)
	Number of connected stations: 49 to 64	30 cm (11.81 in.) to 39 cm (15.35 in.) ∗		20 m (65.52 ft.)
		40 cm (15.75 in.) to 69 cm (27.17 in.) ∗		30 m (98.43 ft.)
		70 cm (27.56 in.) or more		100 m (328.1 ft.)

∗ The cable length between remote I/O stations or remote device stations is within this range and if even one location is wired, the maximum overall cable distance will be as indicated above.

(Example) When the transmission rate is 10 Mbps, and 43 remote I/O stations and remote device stations are connected using the CC-Link dedicated high performance cable, because the cable connecting the second and third stations is "35 cm (13.78 in.)", the maximum overall cable distance will be "80 cm (31.5 in.)".



(2) For a system consisting of remote I/O stations, remote device stations, local stations and intelligent device stations



∗1 Cable length between remote I/O stations or remote device stations

∗2 Cable length between the master station or the local or intelligent device station and the adjacent stations

CC-Link dedicated cable (uses terminal resistor 110 Ω)

Transmission rate	Station-to-station cable length		Maximum overall cable distance
	∗1	∗2	
156 kbps	30 cm (11.81 in.) or more	2 m (6.56 ft.) or more	1200 m (3937.2 ft.)
625 kbps			600 m (1968.6 ft.)
2.5 Mbps			200 m (656.2 ft.)
5 Mbps	30 cm (11.81 in.) to 59 cm (23.23 in.) ∗		110 m (360.9 ft.)
10 Mbps	60 cm (23.62 in.) or more		150 m (492.15 ft.)
	30 cm (11.81 in.) to 59 cm (23.23 in.) ∗		50 m (164.1 ft.)
	60 cm (23.62 in.) to 99 cm (38.98 in.) ∗		80 m (262.5 ft.)
	1 m (3.28 ft.) or more		100 m (328.1 ft.)

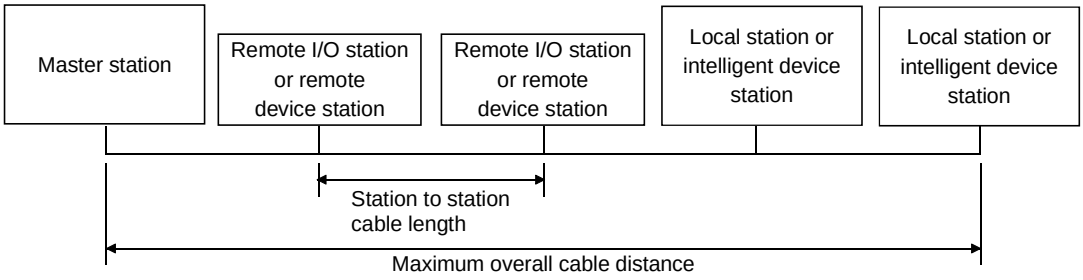
CC-Link dedicated high performance cable (uses terminal resistor 130 Ω)

Transmission rate	Station-to-station cable length		Maximum overall cable distance
	∗1	∗2	
156 kbps	30 cm (11.81 in.) or more	2 m (6.56 ft.) or more	1200 m (3937.2 ft.)
625 kbps			600 m (1968.6 ft.)
2.5 Mbps			200 m (656.2 ft.)
5 Mbps	30 cm (11.81 in.) to 59 cm (23.23 in.) ∗		110 m (360.9 ft.)
	60 cm (23.62 in.) or more		150 m (492.15 ft.)
10 Mbps	70 cm (27.56 in.) to 99 cm (38.98 in.) ∗		50 m (164.1 ft.)
	1 m (3.28 ft.) or more		80 m (262.5 ft.)

∗ The cable length between remote I/O stations or remote device stations is within this range and if even one location is wired, the maximum overall cable distance will be as indicated above.

4.2.2 Maximum overall cable distance (for Ver. 1.10)

The relation of the transmission speed and maximum overall cable distance when configuring the entire system with Version 1.10 modules and cable is shown below.


Master station
Remote I/O station or remote device station
Remote I/O station or remote device station
Local station or intelligent device station
Local station or intelligent device station
Station to station cable length
Maximum overall cable distance

Version 1.10 compatible CC-Link dedicated cable (terminal resistor of 110Ω used)

Transmission speed	Station to station cable length	Maximum overall cable distance
156kbps	20cm (7.88 in.) or longer	1200m (3937.2 ft.)
625kbps		900m (2952.9 ft.)
2.5Mbps		400m (1312.4 ft.)
5Mbps		160m (524.96 ft.)
10Mbps		100m (328.1 ft.)

4 - 5

4.3 CC-Link Dedicated Cable

Use the CC-Link dedicated cable for the CC-Link system. If a cable other than the CC-Link dedicated cable is used, the performance of the CC-Link system cannot be guaranteed.
If you have any questions regarding the CC-Link dedicated cable, or if you wish to see its specifications, see the CC-Link Partner Association homepage http://www.cc-link.org/.

4.4 List of Functions

The following table lists the CC-Link board functions.

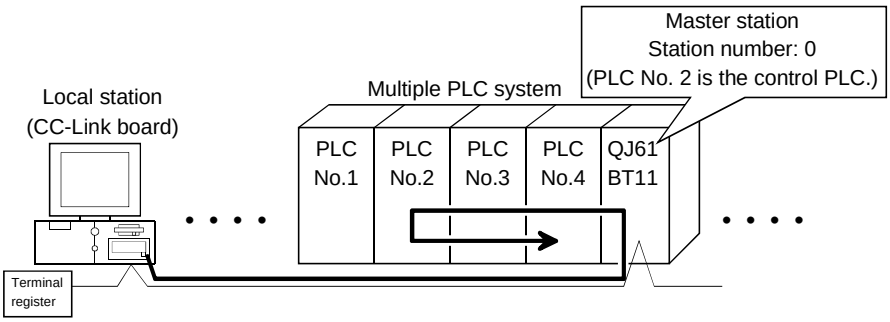
Name	Contents
Data communication function	(1) Communication for remote input (RX), remote output (RY), remote register (RWw, RWr) via the CC-Link is possible using the cyclic transmission function. • Number of link points per station Remote I/O (RX, RY) : 30 Remote register (RWw) : 4 Remote register (RWr) : 4 (2) Communication with the master station and intelligent device station is possible using the transient transmission function.
Test function	Tests can be performed and the hardware checked using the test mode setting.
RAS functions	Automatic return function, slave station separation function, verification of data link status, off-line test
Self-diagnostic function	• An error message is displayed according to the error code. • Contents of the fault detected are stored in the special relay or special register.

4.4.1 Multiple PLC system support

By setting the logical station number using the CC-Link utility, any PLC of a multiple PLC system in which a QJ61BT11 is installed can be accessed by an IBM PC/AT compatible PC in which a CC-Link board is installed.

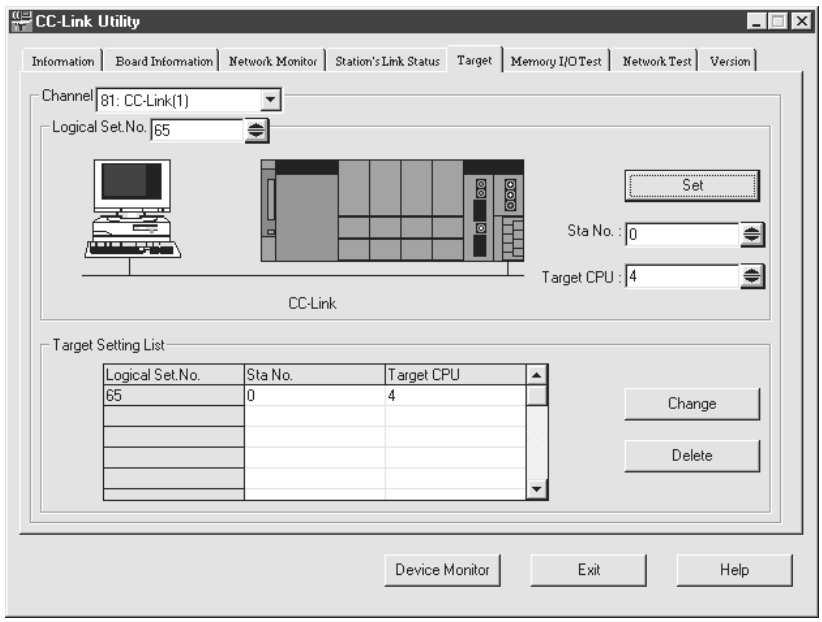
<Access example>

Using logical station number “65,” an access can be made from an IBM PC/AT compatible PC in which a CC-Link board is installed to the PLC No. 4 via a QJ61BT11 (the control PLC is the PLC No.2).



[Setting the logical station number]

Set the logical station number in the "Target" window of the CC-Link utility. For details on the "Target" window, see Section 7.2.6.



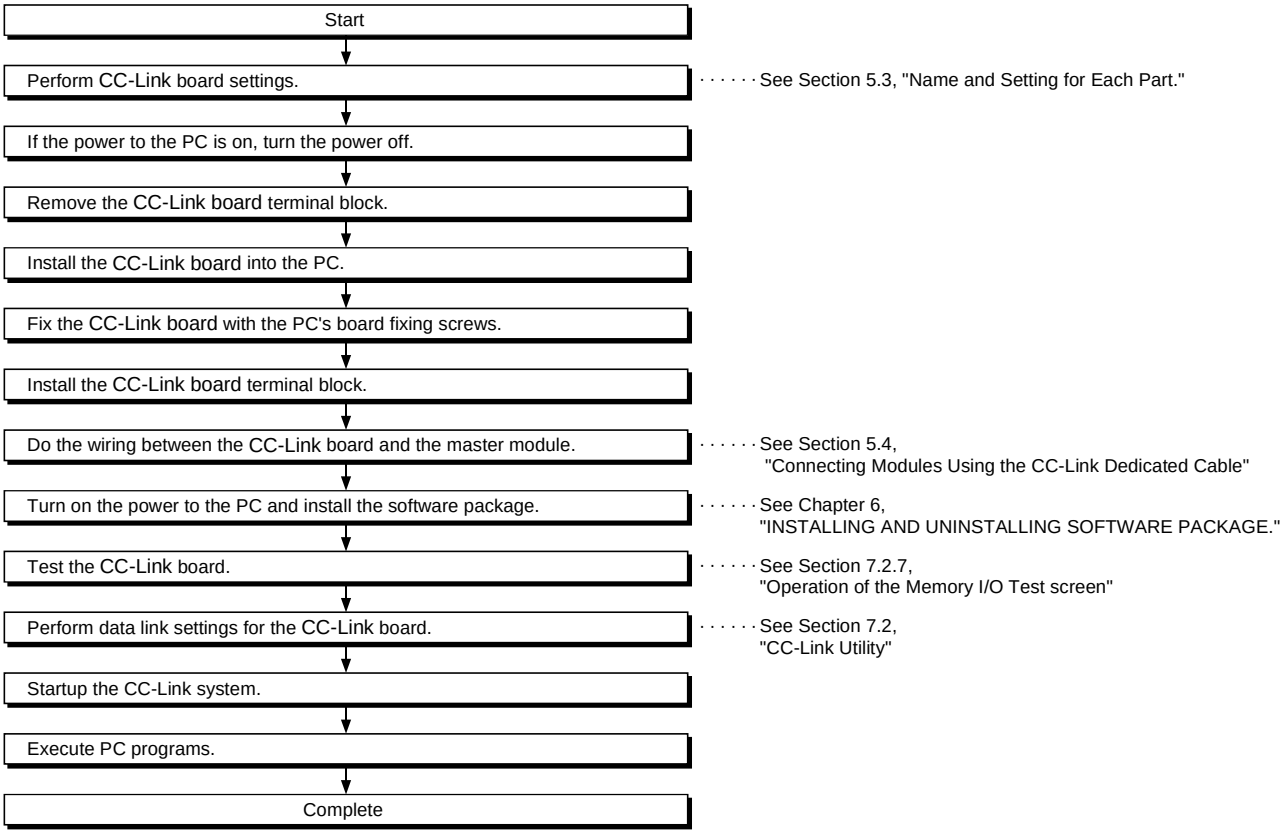
POINT
Use a QJ61BT11 of functional version B or later in order to access a multiple PLC system. A QJ61BT11 of functional version A cannot be used.

5 PROCEDURE AND SETTINGS UP TO THE POINT OF OPERATION

This section explains the operating procedure up to the point the CC-Link board is operated, as well as the names and setting for each part of the CC-Link board, wiring method and hardware testing.

5.1 Procedure Up to the Point of Operation

An outline of the procedure up to the point of CC-Link board operation is explained below.


Start
Perform CC-Link board settings.
See Section 5.3, "Name and Setting for Each Part."
If the power to the PC is on, turn the power off.
Remove the CC-Link board terminal block.
Install the CC-Link board into the PC.
Fix the CC-Link board with the PC's board fixing screws.
Install the CC-Link board terminal block.
Do the wiring between the CC-Link board and the master module.
See Section 5.4, "Connecting Modules Using the CC-Link Dedicated Cable"
Turn on the power to the PC and install the software package.
See Chapter 6, "INSTALLING AND UNINSTALLING SOFTWARE PACKAGE."
Test the CC-Link board.
See Section 7.2.7, "Operation of the Memory I/O Test screen"
Perform data link settings for the CC-Link board.
See Section 7.2, "CC-Link Utility"
Startup the CC-Link system.
Execute PC programs.
Complete

Note

Setting on the master module side is mandatory in order to run the CC-Link system.
Perform the settings for the master module side as required.
See the user manual for the master module regarding the master module settings.

5.2 Installation

This section gives precautions when handling the CC-Link board and explains the installation environment.

5.2.1 Precautions when handling

The followings are precautions to be noted when handling the CC-Link board.

DANGER

- Do not touch the terminal or the connector while the power is turned on.
  Doing so may result in electric shock or cause malfunctioning.

CAUTION

- Fasten the CC-Link board securely using the installation screws and tighten the installation screws securely within the specified torque range.
  If the screws are loose, this may cause malfunctioning.
  If the screws are tightened too much, this could cause damage to the screws or module, leading to malfunctioning.
- Do not directly touch the conductive section of the CC-Link board.
  Doing so could result in malfunctioning or breakdown of the CC-Link board.
- Tighten the terminal screws within the specified torque range.
  If the terminal screws are loose, this may lead to a short or malfunctioning.
  If the terminal screws are tightened too much, this could cause damage to the screws or CC-Link board, leading to a short or malfunctioning.
- Handle the CC-Link board in a location where there is no static electricity.
  Static electricity could result in failure or malfunctioning.
- Take care that foreign objects such as chips or wiring debris do not get into the PC.
  This could result in fire, breakdowns or malfunctioning.
- Do not dismantle or rebuild the CC-Link board.
  This will result in failure, malfunctioning, injury or fire.
- Always turn off all external power before installing or removing the CC-Link board.
  If power is not turned off at all phases, there is a risk of electric shock or damage to the product.
- When discarding the product, handle it as an industrial waste.
- Do not drop the CC-Link board or subject it to strong impact.
  This will result in failure or malfunctioning of the board.

(1) The tightening torque for the CC-Link board terminal screws and fixing screws should fall within the range indicated in the table below.

Screw locations	Tightening torque range
Terminal block terminal screws (M3.5 screw)	59 to 88 N·cm
Terminal block installation screws (M3.5 screw)	59 to 88 N·cm

(2) See the manual attached to the PC unit for the tightening torque of CC-Link board installing screws.

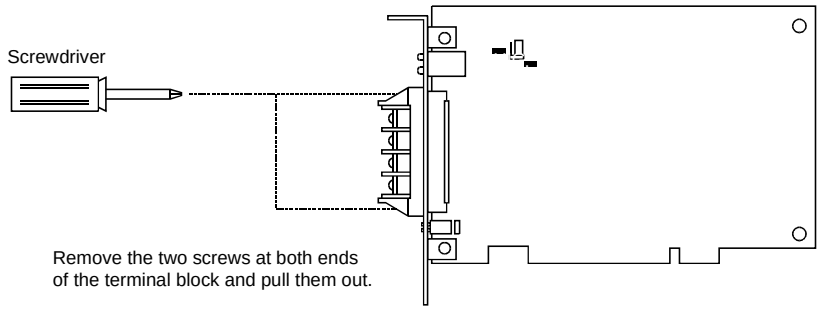
5.2.2 Installation environment

See the instruction manual accompanying the PC unit regarding installation of the PC unit in which the CC-Link board is mounted.

⚠CAUTION	• Always ground the PC unit using grounding type D (Class 3 grounding). Otherwise, there is the risk of malfunctioning. If there is an error in operation even when the PC unit is grounded, ground the FG terminal of the PC unit as well as the SLD terminal of the CC-Link board.

5.2.3 How to remove the terminal block

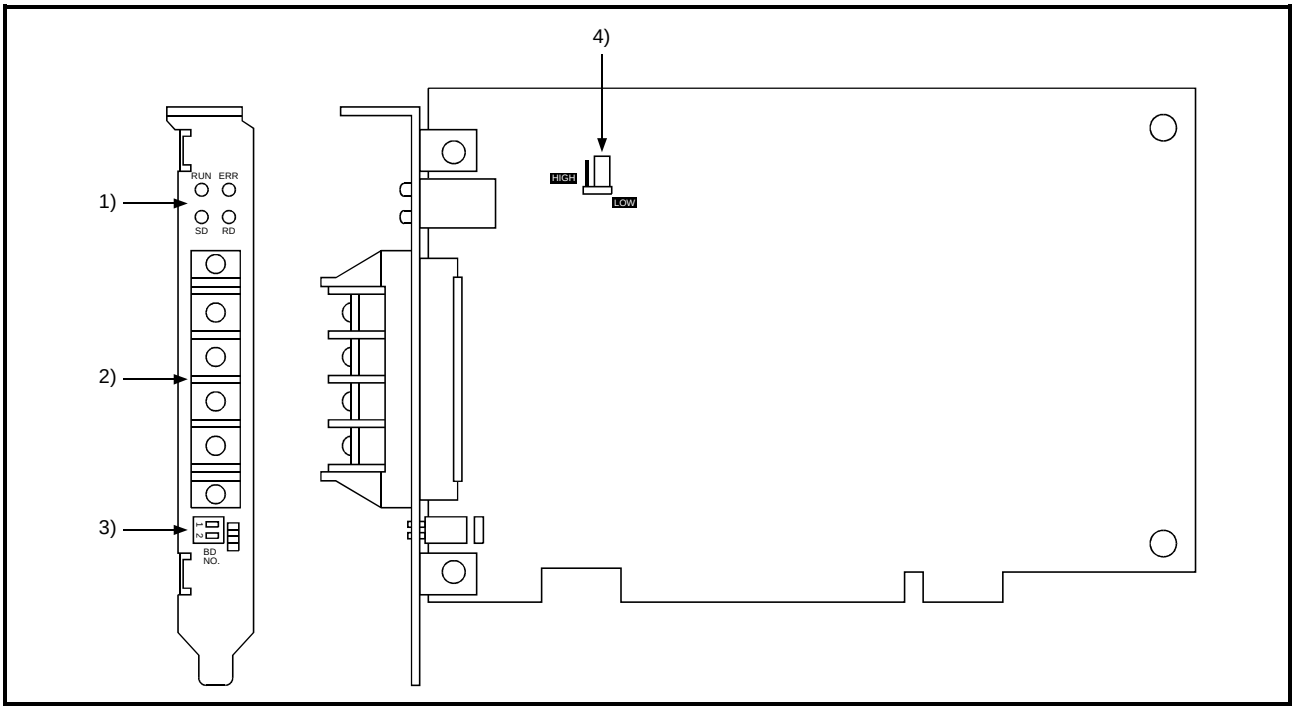
The CC-Link board uses a two-piece terminal block, so that the CC-Link board can be replaced without disconnecting the signal line to the terminal block.
The illustration below shows how to remove the block.



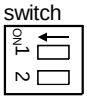
5 - 3

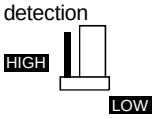
5.3 Name and Setting for Each Part

This section explains the name and settings for each part of the CC-Link board.



Number	Name	Contents			
1)	Operation display LED RUN ERR SD RD	LED nomenclature	Contents	ON	OFF
		RUN	Lights when the CC-Link board is running properly and turns off when a WDT error occurs	CC-Link board is normal	WDT error PC power is OFF
		ERR.	Lights when there is an error in the network communication status	Data link communication error	Data link communication normal
		SD	Flashes when the data link is transmitting data	Flashes while the data link is transmitting	
		RD	Flashes when the data link is receiving data	Flashes while the data link is receiving	
2)	Terminal block for the data link Upper surface of the board DA DB DG SLD	Connect a CC-Link dedicated cable to perform the data link. (2-piece terminal block)			

<table>
<tr><td>Number</td><td>Name</td><td colspan="5">Contents</td></tr>
<tr><td rowspan="8">3)</td><td rowspan="8">Channel number setting switch
 

BD NO.</td><td colspan="5">Sets the channel number for the CC-Link board.</td></tr>
<tr><td>Board number</td><td>Channel number</td><td colspan="2">Switch</td><td>Notes</td></tr>
<tr><td></td><td></td><td>1</td><td>2</td><td></td></tr>
<tr><td>0</td><td>81</td><td>OFF</td><td>OFF</td><td>Default setting</td></tr>
<tr><td>1</td><td>82</td><td>ON</td><td>OFF</td><td></td></tr>
<tr><td>2</td><td>83</td><td>OFF</td><td>ON</td><td></td></tr>
<tr><td>3</td><td>84</td><td>ON</td><td>ON</td><td></td></tr>
<tr><td colspan="5">Set the board number, so that there is no duplication when two or more CC-Link boards are installed.</td></tr>
<tr><td rowspan="5">4)</td><td rowspan="5">Switch setting pin for abnormal temperature detection
 
</td><td colspan="5">Sets the temperature at which to be detected when there is an abnormal temperature.</td></tr>
<tr><td>Setting</td><td colspan="2">Contents</td><td colspan="2">Notes</td></tr>
<tr><td>HIGH</td><td colspan="2">Set the detect temperature at 55 °C.</td><td colspan="2"></td></tr>
<tr><td>LOW</td><td colspan="2">Set the detect temperature at 45 °C.</td><td colspan="2">Default setting</td></tr>
<tr><td colspan="5"></td></tr>
</table>

5.4 Connecting Modules Using the CC-Link Dedicated Cable

This section describes how to connect the CC-Link board, master module, local module, standby master module, remote module, and intelligent device module using the CC-Link dedicated cable.

IMPORTANT

(1) Be sure to turn off the power to the corresponding station before attaching and removing a terminal block. If the terminal block is attached or removed without turning off the power to the corresponding station, normal data transfer will not be guaranteed.

(2) The CC-Link dedicated cables and the high-performance CC-Link dedicated cables cannot be used together. If they are used together, normal data transfer will not be guaranteed.

(3) Be sure to ground the main body of an IBM PC/AT compatible PC using Class-D grounding (Class 3 grounding) or higher. Otherwise, malfunction may occur. If malfunction occurs when only the main body of an IBM PC/AT compatible PC is grounded, ground the FG terminal of the IBM PC/AT compatible PC and the SLD terminal of the CC-Link board.

(1) The order of cable connection is irrelevant to the station number.

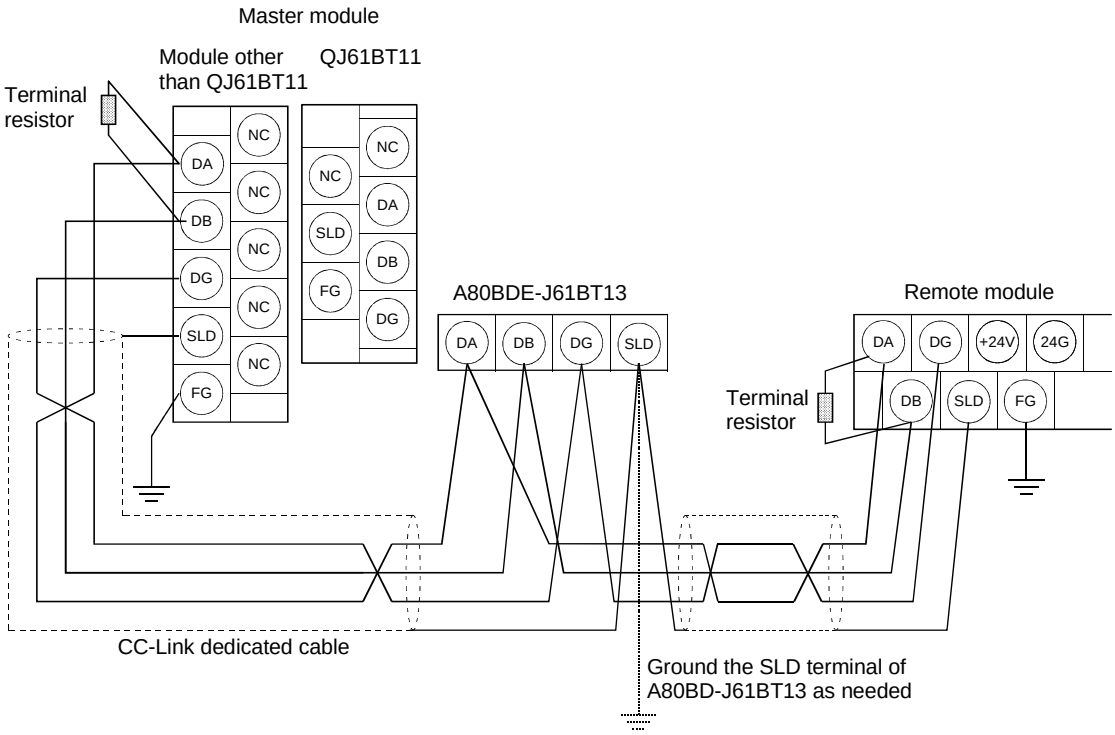
(2) Be sure to connect a “terminal resistor,” which is provided with the module, tothe modules at both ends of the CC-Link system.
Connect it between DA and DB.

(3) Terminal resistors to be connected are different depending on the cable used by the CC-Link system:
- When a CC-Link dedicated cable is used: 110Ω 1/2W (brown-brown-brown)
- When a high-performance CC-Link dedicated cable is used: 130Ω 1/2W (brown-orange-brown)

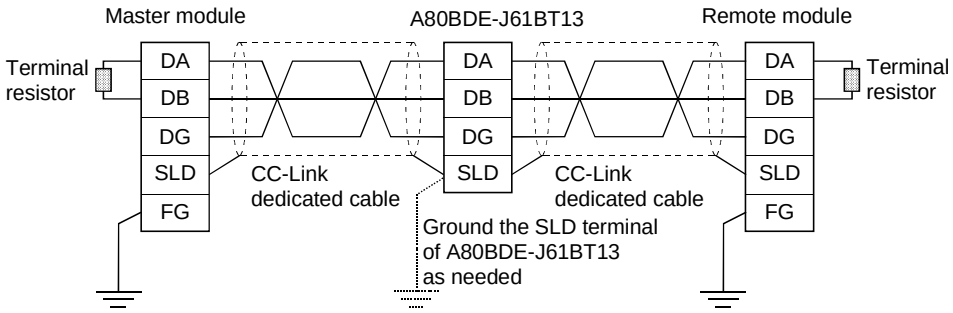
(4) The master module can be connected to locations other than both ends.

(5) Star connection is not allowed.

(6) The connection method is shown below.



[Simplified Diagram] The following shows a simplified diagram of the connection diagram on the previous page.



POINT

(1) The layouts of the terminal block for the QJ61BT11 and of the terminal blocks for other than the QJ61BT11 are different. Exercise caution when wiring them.

(2) Be sure to connect a "terminal resistor," which is provided with the master module, to the modules at both ends of the data link. (Connect it between DA and DB.)

5.5 T-Branch Connection Using the CC-Link Dedicated Cable

For details on the T-branch connection using the CC-Link Dedicated cable, refer to the following manuals:

- Control & Communication System Master/Local Module Type QJ61BT11 User's Manual
- Control & Communication System Master/Local Module Type AJ61BT11/A1SJ61BT11 User's Manual
- Control & Communication System Master/Local Module Type AJ61QBT11/A1SJ61QBT11 User's Manual
- A80BDE-J61BT11 Control & Communication System Master/Local Interface Board User's Manual (For SW4DNF-CCLINK-B)

6 INSTALLING AND UNINSTALLING THE SOFTWARE PACKAGE

This section explains how to install and uninstall the software package.

6.1 Installing the Software Package

The following explains the installation procedure of the driver and the installation procedure of the utility.

6.1.1 Installing the driver

The following explains the installation procedure of the CC-Link board driver.

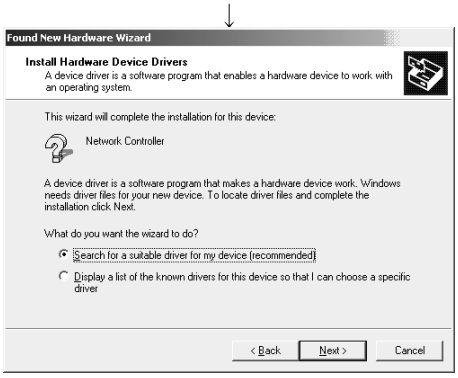
POINT
When Microsoft® Windows NT® Workstation Operating System Version 4.0 is used, the installation of the CC-Link board driver is not required.

(1) When Microsoft® Windows® 2000 Professional Operating System is used

1. Mount the CC-Link board to a PC, then power on the PC to start Windows® 2000 Professional.

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
This wizard helps you install a device driver for a hardware device.
To continue, click Next.
< Back
Next >
Cancel

2. When the screen shown left is displayed, click the Next> button.


Found New Hardware Wizard
Install Hardware Device Drivers
A device driver is a software program that enables a hardware device to work with an operating system.
This wizard will complete the installation for this device:
Network Controller
A device driver is a software program that makes a hardware device work. Windows needs driver files for your new device. To locate driver files and complete the installation click Next.
What do you want the wizard to do?
Search for a suitable driver for my device (recommended)
Display a list of the known drivers for this device so that I can choose a specific driver
< Back
Next >
Cancel

3. When the screen shown left is displayed, select "Search for a suitable driver for my device [recommended]," then click the Next> button.

(To the next page)

(From the previous page)

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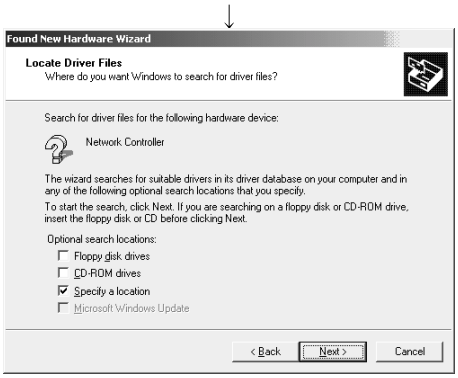
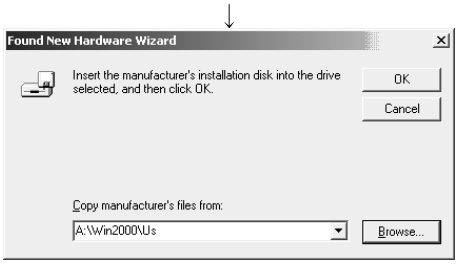

Found New Hardware Wizard
Locate Driver Files
Where do you want Windows to search for driver files?
Search for driver files for the following hardware device:
Network Controller
The wizard searches for suitable drivers in its driver database on your computer and in any of the following optional search locations that you specify.
To start the search, click Next. If you are searching on a floppy disk or CD-ROM drive, insert the floppy disk or CD before clicking Next.
Optional search locations:
Floppy disk drives
CD-ROM drives
Specify a location
Microsoft Windows Update
< Back
Next >
Cancel

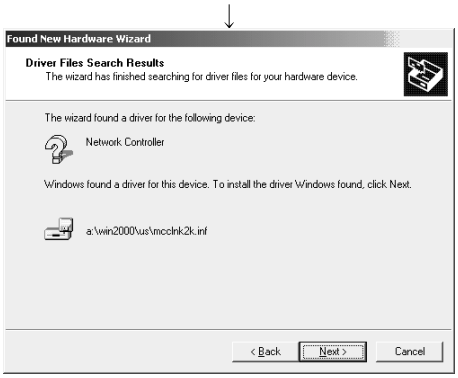
4. When the screen shown left is displayed, select "Specify a location" and click the Next> button.

↓



5. When the screen shown left is displayed, enter "A:\Win2000\Us" for "Copy manufacturer's files from." Insert Disk 6 into the floppy disk drive, then click the OK button.

↓


Found New Hardware Wizard
Driver Files Search Results
The wizard has finished searching for driver files for your hardware device.
The wizard found a driver for the following device:
Network Controller
Windows found a driver for this device. To install the driver Windows found, click Next.
a:\win2000\us\mcclnk2k.inf
< Back
Next >
Cancel

6. When the screen shown left is displayed, click the Next> button.

↓

Found New Hardware Wizard
Completing the Found New Hardware Wizard
PCI MELSEC CC-LINK Controller
Windows has finished installing the software for this device.
To close this wizard, click Finish.
< Back
Finish
Cancel

7. The installation is complete when the screen shown left is displayed. Click the Finish button.

↓

(Complete)

6

6 - 2

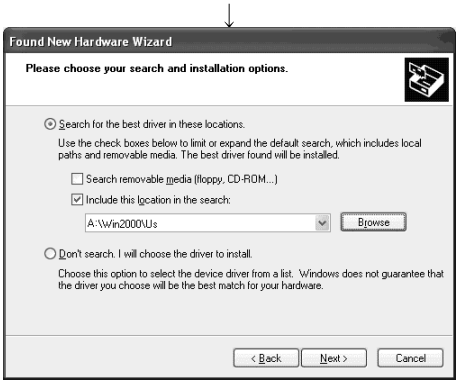
(2) When Microsoft® Windows® XP Professional Operating System is used.

1. Mount a CC-Link board to a PC, and then power on the PC to start Windows® XP Professional.

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
This wizard helps you install software for:
Network Controller
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

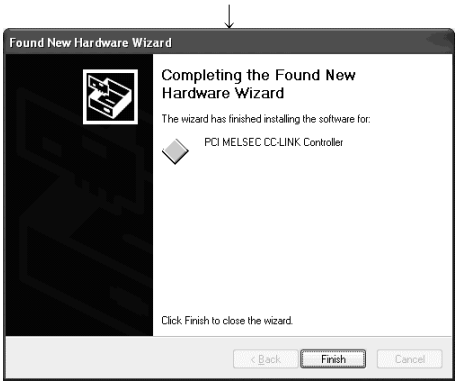
2. When the screen shown left is displayed, select "Install from a list or specific location (Advanced)" and then click the NEXT button.

↓


Found New Hardware Wizard
Please choose your search and installation options.
Search for the best driver in these locations.
Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.
Search removable media (floppy, CD-ROM...)
Include this location in the search:
A:\Win2000\Us
Browse
Don't search. I will choose the driver to install.
Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.
< Back
Next >
Cancel

3. As the screen shown left is displayed, select "Search for the best driver in these locations".
   Check "Include this location in the search" and enter "A:\Win2000\Us".
   Insert Disk 6 into the floppy disk drive, and then click the Next> button to start the drive installation.

↓


Found New Hardware Wizard
Completing the Found New Hardware Wizard
The wizard has finished installing the software for:
PCI MELSEC CC-LINK Controller
Click Finish to close the wizard.
< Back
Finish
Cancel

4. When the screen shown left is displayed, this means that the installation is completed.
   Click the Finish button.

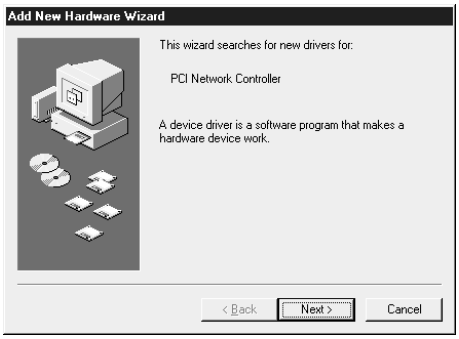
↓

(Complete)

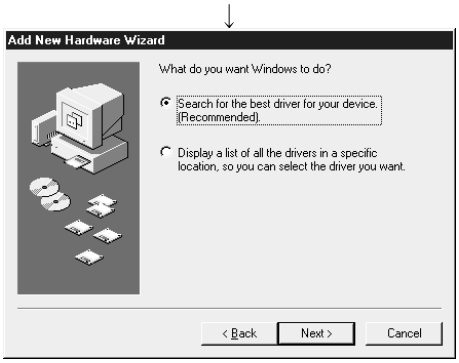
6 - 3

(3) When Microsoft® Windows® 95 Operating System or Microsoft® Windows® 98 Operating System is used

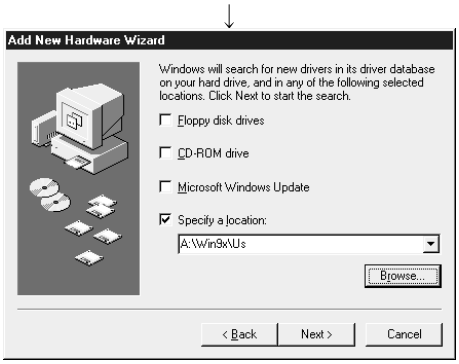
1. Mount the CC-Link board to a PC, then power on the PC to start Windows® 95 or Windows® 98.


Add New Hardware Wizard
This wizard searches for new drivers for:
PCI Network Controller
A device driver is a software program that makes a hardware device work.
< Back
Next >
Cancel

2. When the screen shown left is displayed, click the Next> button.


Add New Hardware Wizard
What do you want Windows to do?
Search for the best driver for your device. (Recommended).
Display a list of all the drivers in a specific location, so you can select the driver you want.
< Back
Next >
Cancel

3. When the screen shown left is displayed, select "Search for the best driver for your device [Recommended]," then click the Next> button.


Add New Hardware Wizard
Windows will search for new drivers in its driver database on your hard drive, and in any of the following selected locations. Click Next to start the search.
Floppy disk drives
CD-ROM drive
Microsoft Windows Update
Specify a location:
A:\Win9x\Us
Browse...
< Back
Next >
Cancel

4. When the screen shown left is displayed, check "Specify a location," enter "A:\Win9x\Us" for the search location, then insert Disk 6 into the floppy disk drive.

(To the next page)

(From the previous page)

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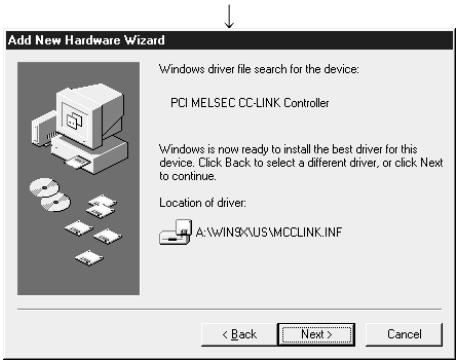
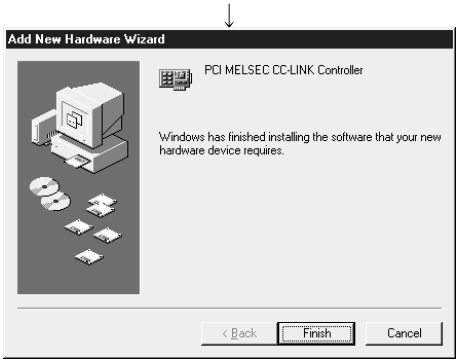

Add New Hardware Wizard
Windows driver file search for the device:
PCI MELSEC CC-LINK Controller
Windows is now ready to install the best driver for this device. Click Back to select a different driver, or click Next to continue.
Location of driver:
A:\WIN3X\US\MCCLINK.INF
< Back
Next >
Cancel

5. The driver file for the device will be searched.
   Click the Next> button.

↓


Add New Hardware Wizard
PCI MELSEC CC-LINK Controller
Windows has finished installing the software that your new hardware device requires.
< Back
Finish
Cancel

6. The installation is complete when the screen shown left is displayed.
   Click the Finish button.

↓

(Complete)

6.1.2 Installing the utility

The following explains the installation procedure of the utility.
The screens of Windows® 2000 Professional are used in the explanation.
Therefore, these screens are slightly different from other operating systems.
Install the utilities with reference to REMARK.

POINT

(1) When using the following Operating systems, logon as a user who has administrator authority.
- Windows® XP Professional
- Windows® 2000 Professional
- Windows NT® Workstation 4.0

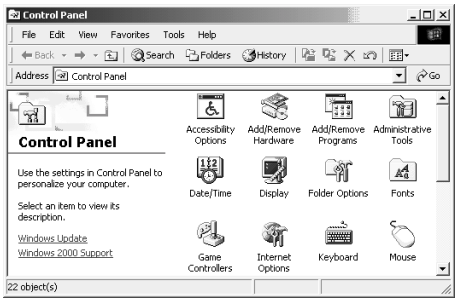
(2) Remove all the applications that are included in the startup, then restart Windows® before installing SW4DNF-CCLINK-B.

(3) Make sure to close other applications running on Windows® (including resident software such as antivirus software) before installation.

(4) Be sure to uninstall SWnDNF-CCLINK first, then install SW4DNF-CCLINK-B. Since all the data set by each utility will be erased, it is necessary to set them again.

(5) To install the utility, use "Add/Remove Programs" in "Control Panel."
As an alternative method, you can execute "Setup.exe".
Double-click "Setup.exe" in Disk 1, then start the installation from item [6.] below.

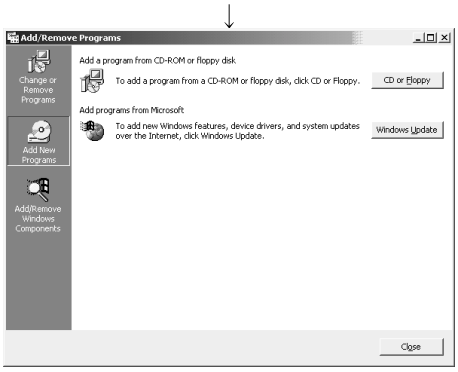
1. Power on the PC and start Windows® .



2. Open [Start] - [Settings] - [Control Panel].

REMARK

When Windows® XP Professional is used, open [Start] - [Control Panel].


Add/Remove Programs
Add a program from CD-ROM or floppy disk
To add a program from a CD-ROM or floppy disk, click CD or Floppy.
CD or Floppy
Add programs from Microsoft
To add new Windows features, device drivers, and system updates over the Internet, click Windows Update.
Windows Update
Change or Remove Programs
Add New Programs
Add/Remove Windows Components
Close

3. Open "Add/Remove Programs" and select "Add New Program."
When the screen shown at the left is displayed, click the CD or Floppy button.

REMARK

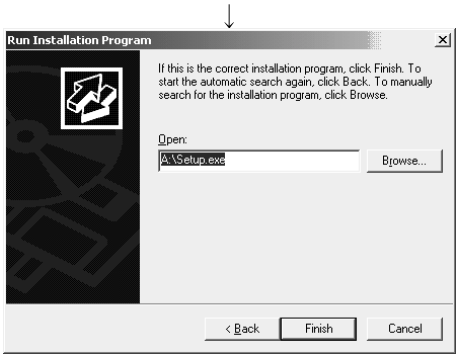
When Windows® 95, Windows® 98, or Windows NT® Workstation 4.0 is used, open "Add/Remove Programs" and click the Install... button.

(To the next page)

(From the previous page)

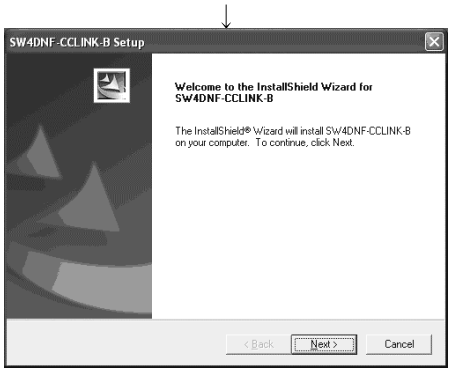
Install Program From Floppy Disk or CD-ROM
Insert the product's first installation floppy disk or CD-ROM, and then click Next.
< Back
Next >
Cancel

4. When the screen shown left is displayed, insert Disk 1 into the floppy disk drive and click the [Next>] button.


Run Installation Program
If this is the correct installation program, click Finish. To start the automatic search again, click Back. To manually search for the installation program, click Browse.
Open:
A:\Setup.exe
Browse...
< Back
Finish
Cancel

5. When the screen shown left is displayed, "Setup.exe" has been found. Click the [Finish] button and start the installation.
   If "Setup.exe" was not found, click the [Browse...] button and change to the location where "Setup.exe" exists.

6. When the screen shown left is displayed, select "English" and click the [OK] button.

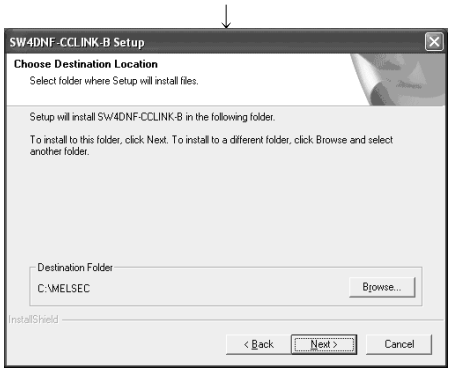

SW4DNF-CCLINK-B Setup
Welcome to the InstallShield Wizard for SW4DNF-CCLINK-B
The InstallShield® Wizard will install SW4DNF-CCLINK-B on your computer. To continue, click Next.
< Back
Next >
Cancel

7. When the screen shown left is displayed, click the [Next>] button.

(To the next page)

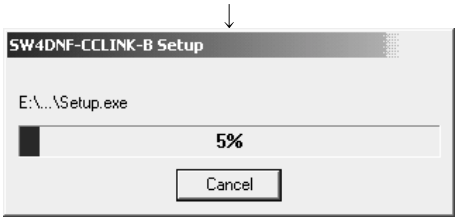
(From the previous page)

↓


SW4DNF-CCLINK-B Setup
Choose Destination Location
Select folder where Setup will install files.
Setup will install SW4DNF-CCLINK-B in the following folder.
To install to this folder, click Next. To install to a different folder, click Browse and select another folder.
Destination Folder
C:\MELSEC
Browse...
InstallShield
< Back
Next >
Cancel

8. Specify the installation destination folder.
   The default installation destination folder of SW4DNF-CCLINK-B is "C:\MELSEC."
   To accept the default, click the Next> button.
   To change the installation destination folder, click the Browse... button.

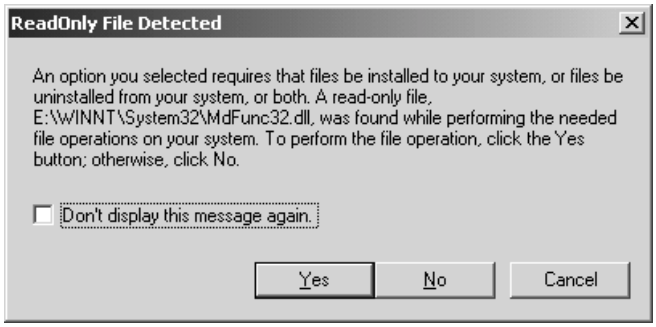
↓



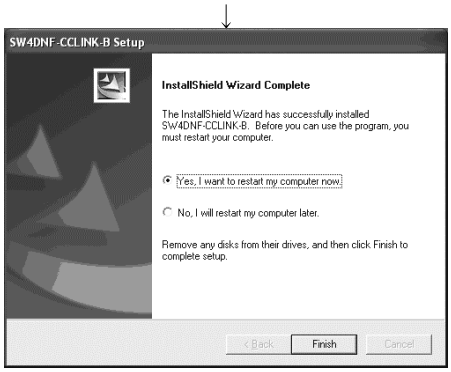
9. The installation will start. Switch floppy disks in the order, as instructed on the screen.

REMARK

If the following screen is displayed during installation, click the Yes button and continue with the installation.


ReadOnly File Detected
An option you selected requires that files be installed to your system, or files be uninstalled from your system, or both. A read-only file, E:\WINNT\System32\MdFunc32.dll, was found while performing the needed file operations on your system. To perform the file operation, click the Yes button; otherwise, click No.
Don't display this message again.
Yes
No
Cancel

↓


SW4DNF-CCLINK-B Setup
InstallShield Wizard Complete
The InstallShield Wizard has successfully installed SW4DNF-CCLINK-B. Before you can use the program, you must restart your computer.
Yes, I want to restart my computer now.
No, I will restart my computer later.
Remove any disks from their drives, and then click Finish to complete setup.
< Back
Finish
Cancel

10. The installation is complete when the screen shown left is displayed.
    To restart, confirm that "Yes, I want to restart my computer now" is checked, then click the Finish button.
    To restart later, check "No, I will restart my computer later," then click the Finish button.

↓

(Complete)

POINT

(1) If the installation failed to complete and it is possible to uninstall the software package, execute the uninstall procedure.
(2) To reinstall the software package, uninstall it first, restart the PC, and then reinstall.

6 - 8

6.2 Icons to be Registered

When the software package is installed, the following icons are registered in [Start] - [Programs] - [MELSEC].

REMARK

When Windows® XP Professional is used, the following icons are registered in [Start] - [All Programs] - [MELSEC].

Icon	Utility name	Description
	CC-Link utility	Starts the CC-Link utility.
	Error Viewer *1	Starts Error Viewer.

*1: Supported for Windows® 95 and Windows® 98 only.

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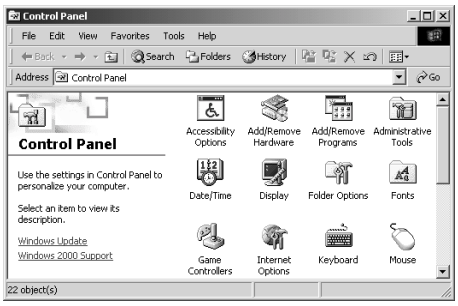
6.3 Uninstalling the Software Package

The following explains how to uninstall the software package.
The screens of Windows® 2000 Professional are used in the explanation.
Therefore, these screens are slightly different from other Operating systems.
Uninstall the utilities with reference to REMARK.

POINT

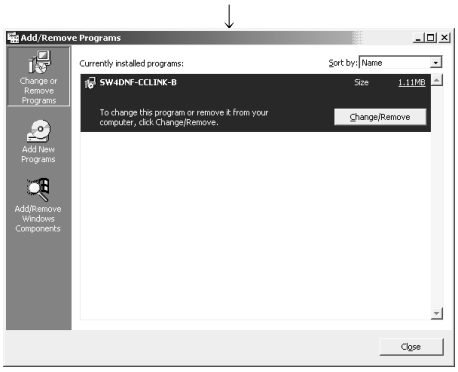
(1) Always uninstall from Control Panel.
Do not directly start the installed "UnInstaller.exe."
(2) To reinstall the software package, uninstall it first, restart the PC, and then reinstall.



1. Open [Start] - [Settings] - [Control Panel].

REMARK

When Windows® XP Professional is used, open [Start] - [Control Panel].

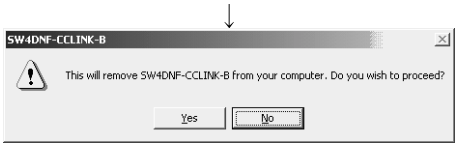


2. Open "Add/Remove Programs" and select "Change or remove programs."
Select SW4DNF-CCLINK-B and click the Change/Remove button.

REMARK

When Windows® 95, Windows® 98, or Windows NT® Workstation 4.0 is used, select SW4DNF-CCLINK-B and click the Add/Remove... button.

When Windows® XP Professional is used, select SW4DNF-CCLINK-B and then click on the Change/Remove button.



3. When the screen shown left is displayed, click the Yes button to begin uninstalling the software package.

4. After the uninstall procedure of the software package is complete, click the OK

(Complete)

7 UTILITY OPERATION

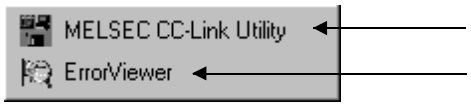
POINT
When using Microsoft® Windows® 2000 Professional Operating System, Microsoft® Windows NT® Workstation Operating System Version 4.0 or Microsoft® Windows® XP Professional Operating System, use each utility after logging on as the user who has administrator authority.

7.1 Utility Common Operations

This section explains the common operations for each utility.

7.1.1 Starting a utility

An utility can be started by clicking on the following menus found in the [Start] – [Program ∗1] – [MELSEC] menu.



Starts the CC-Link Utility.

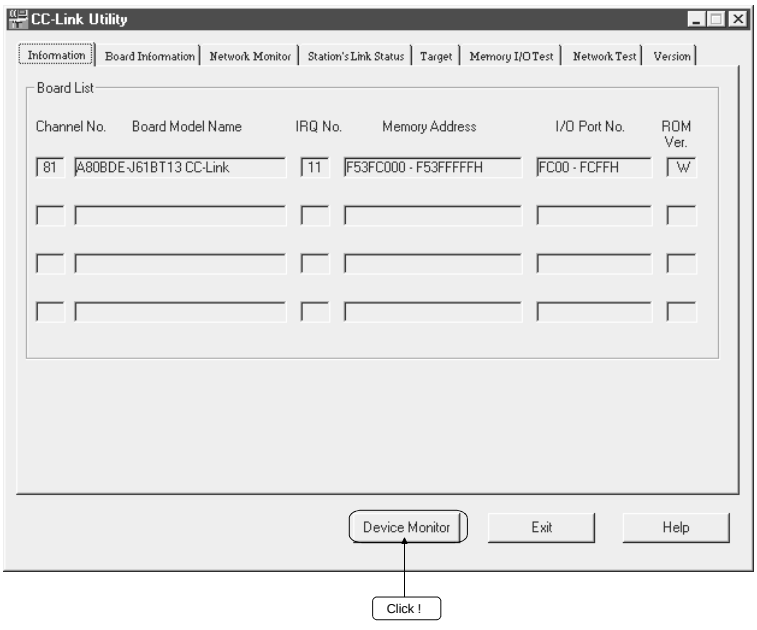
Starts the Error Viewer. ∗1

∗1 : When Microsoft® Windows® XP Professional Operating System is used, [All programs] is displayed.

∗2 : The error viewer is regiatered only when the operating system is Microsoft® Windows® 95 Operating System or Microsoft® Windows® 98 Operating System.

7.1.2 Starting the device monitor utility

The following explains how to start the device monitor utility from the CC-Link utility. The device monitor utility can be started by clicking on the Device Monitor button found at the bottom of the CC-Link utility screen.

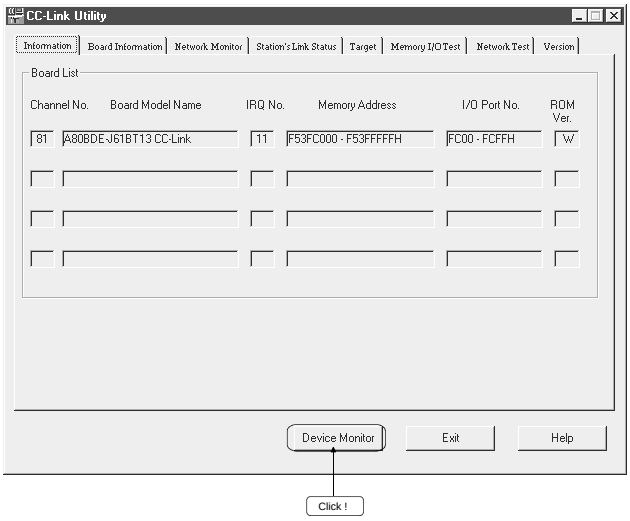


7

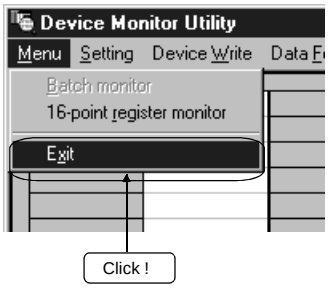
7.1.3 Ending a utility

This section explains how to end a utility.

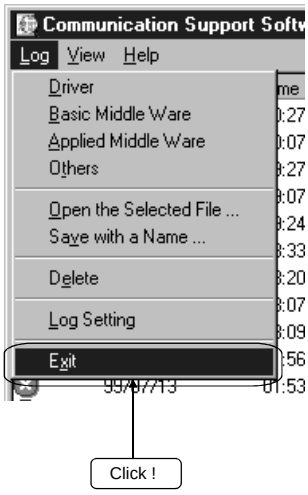
(1) To end the utility, click the Exit button at the bottom of the utility screen.



(2) To end the device monitor utility, click [Menu] – [Exit] from the menu bar. When a dialog box is displayed, clicking the Yes button ends the device monitor utility.



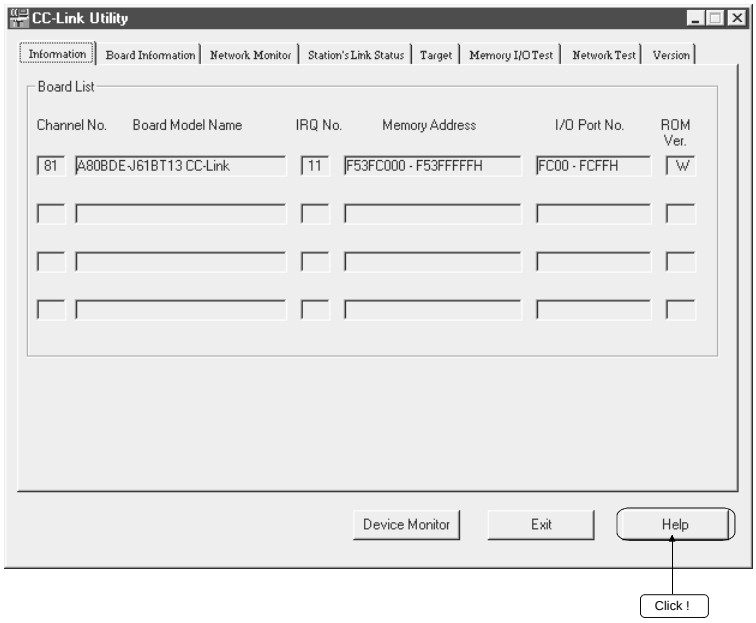
(3) To end the error viewer, click [Log] – [Exit] menu from the menu bar.



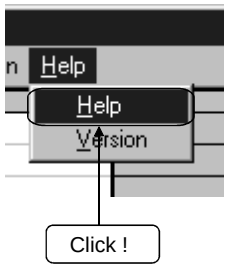
7.1.4 Displaying the help screen

This section explains how to display the utility's help screen.

(1) To display the utility's help screen, click the Help button at the lower right-hand corner of the utility screen.



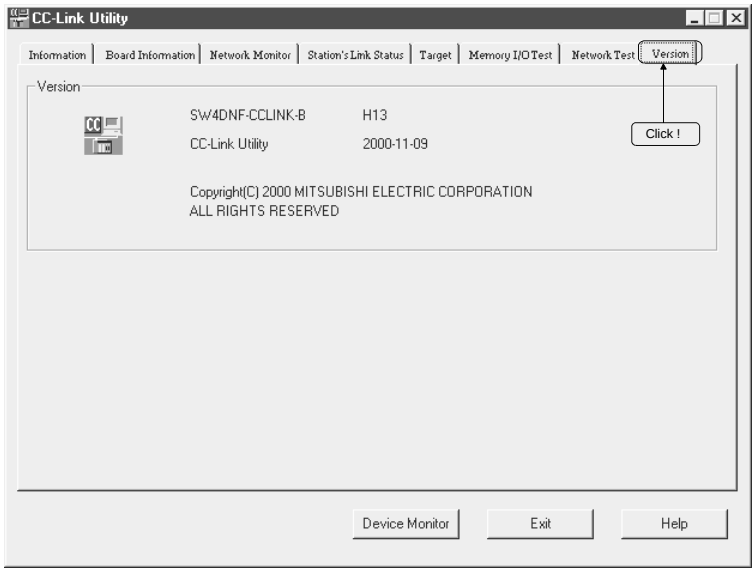
(2) To display the help screen for the device monitor utility and error viewer, click [Help] – [Help] from the menu bar.



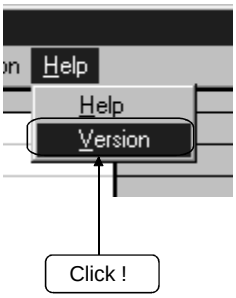
7.1.5 Verifying the version

This section explains how to verify the utility version.

(1) To verify a utility's version, click the "Version" tab.



(2) To verify the version for the device monitor utility and error viewer, click [Help] - [Version] from the menu bar.

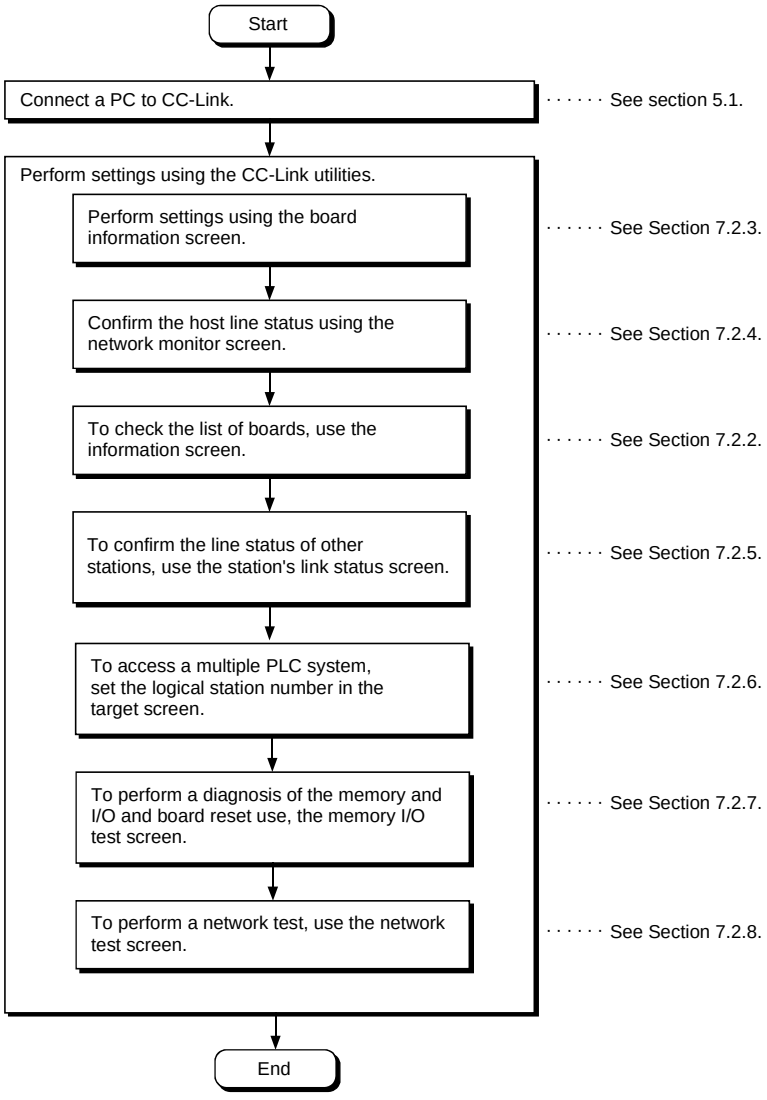


7.2 CC-Link Utility

This section explains how to operate the CC-Link utilities.

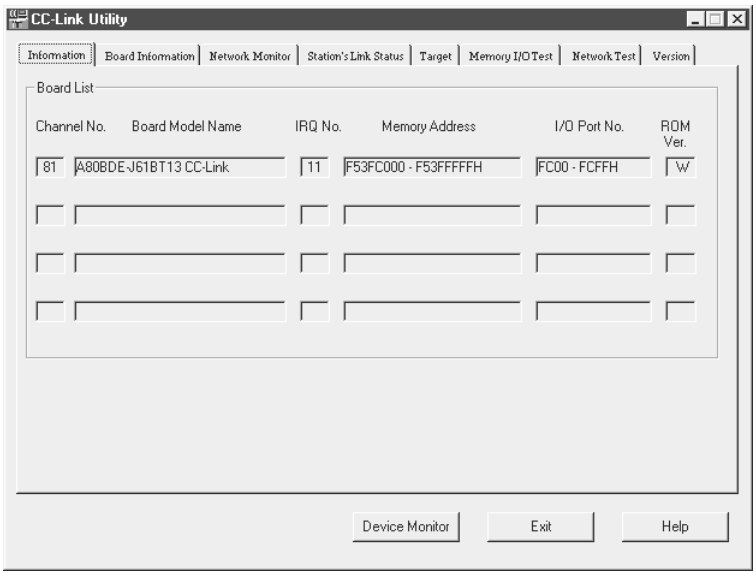
7.2.1 Operation procedure

The following explains the operation procedure for the CC-Link utilities.


Start
Connect a PC to CC-Link.
See section 5.1.
Perform settings using the CC-Link utilities.
Perform settings using the board information screen.
See Section 7.2.3.
Confirm the host line status using the network monitor screen.
See Section 7.2.4.
To check the list of boards, use the information screen.
See Section 7.2.2.
To confirm the line status of other stations, use the station's link status screen.
See Section 7.2.5.
To access a multiple PLC system, set the logical station number in the target screen.
See Section 7.2.6.
To perform a diagnosis of the memory and I/O and board reset use, the memory I/O test screen.
See Section 7.2.7.
To perform a network test, use the network test screen.
See Section 7.2.8.
End

7.2.2 Operations on Information screen

The hardware information that is set for CC-Link board is displayed.

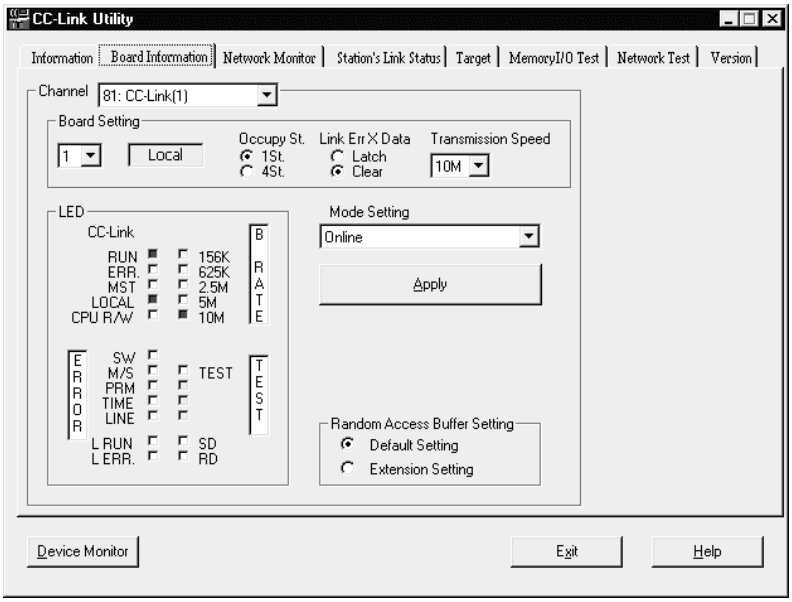


Item	Description
Channel No.	Displays the channel number.
Board Model Name	Displays the model of CC-Link board that is connected.
IRQ No.	Displays the IRQ number that CC-Link board uses.
Memory Address	Displays the range of dual-port memory that CC-Link board occupies.
I/O Port no.	Displays the ranges of I/O port that CC-Link board occupies.
ROM Ver.	Displays the ROM version of CC-Link board.

7.2.3 Operations on Board Information screen

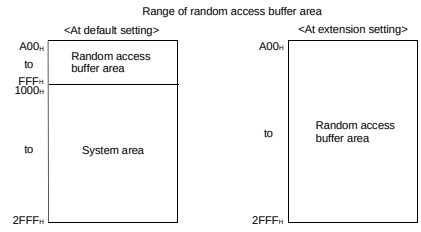
The card information screen is used to set and to display various information about the installed CC-Link board.

POINT
When switching screens, set the mode setting to "On-line" or "Off-line."



Item	Description
Channel	Sets a channel to be used.
Board Setting	Sets information on the host.

Item	Setting
Station number	Station 1 to 64
Number of stations occupied	1 station/4 stations
Data entered at fault	Latch/clear
Transmission Speed	156 k/625 k/2.5 M/5 M/10 Mbps

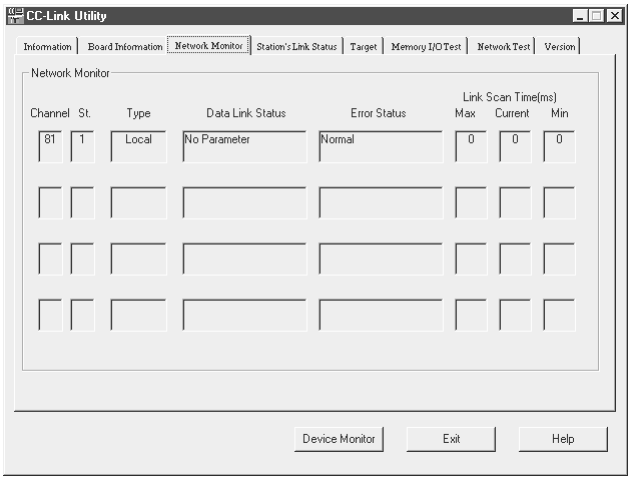
<table>
<tr><th>Item</th><th colspan="3">Description</th></tr>
<tr><td>LED</td><td colspan="3">Display present status of CC-Link board.
<table>
<tr><th>LED name</th><th>LED On</th></tr>
<tr><td>RUN</td><td>CC-Link system normal</td></tr>
<tr><td>ERR.</td><td>Communication abnormal</td></tr>
<tr><td>MST</td><td>Master station</td></tr>
<tr><td>LOCAL</td><td>Local station</td></tr>
<tr><td>CPU R/W</td><td>Communicating</td></tr>
<tr><td>SW</td><td>Switch setting error</td></tr>
<tr><td>M/S</td><td>Master station duplication error</td></tr>
<tr><td>PRM</td><td>Parameter error</td></tr>
<tr><td>TIME</td><td>No response is received from all stations due to cable disconnection or the transmission path being affected by noise.</td></tr>
<tr><td>LINE</td><td>Cable disconnection error</td></tr>
<tr><td>L RUN</td><td>Data link running</td></tr>
<tr><td>L ERR.</td><td>When lit: Communication error
When blinking: A terminal resistor is not installed.
The CC-Link board or CC-Link dedicated cable is affected by noise.</td></tr>
<tr><td>156k</td><td rowspan="5">LED for the set transmission speed is lit.</td></tr>
<tr><td>625k</td></tr>
<tr><td>2.5M</td></tr>
<tr><td>5M</td></tr>
<tr><td>10M</td></tr>
<tr><td>TEST</td><td>Off-line test executing</td></tr>
<tr><td>SD</td><td>Data transmitting</td></tr>
<tr><td>RD</td><td>Data receiving</td></tr>
</table></td></tr>
<tr><td>Mode Setting</td><td colspan="3">Perform the mode setting for the CC-Link board, and display the present mode status.
<table>
<tr><th>Mode</th><th>Data</th></tr>
<tr><td>Online</td><td>Used for normal communication</td></tr>
<tr><td>Offline</td><td>Becomes the state when not connected to the network.</td></tr>
<tr><td>Hardware test</td><td>Executes a test of the A80BDE-J61BT13 hardware.
[Procedure]
Connect a terminal resistor between the terminal DA and DB.
Set the mode setting to "Hardware test" and press the Apply button.</td></tr>
</table></td></tr>
<tr><td>Apply button</td><td colspan="3">The contents of the setting with respect to the CC-Link board selected by the channel are updated.</td></tr>
<tr><td rowspan="2">Random Access Buffer Setting</td><td>Default Setting</td><td>The random access buffer area is used via default setting. (Buffer memory area: A00H to FFFH)</td><td rowspan="2"> 
</td></tr>
<tr><td>Extension Setting</td><td>The random access buffer area is used via extension setting. (Buffer memory area: A00H to 2FFFH)</td></tr>
</table>

7.2.4 Operations on Network Monitor screen

This screen monitors the line status of the host.

POINT

To restart monitoring after monitoring stops due to an error, display a screen other than the "Network Monitor" screen first, and then display the "Network Monitor" screen again.



Item		Description
Channel		Displays the channel number.
St.		Displays the station number of the host.
Data Link Status		Monitors and displays the startup status of the data link.

Status	Contents
Initial status	Data link is in initial status.
No parameter	Parameters have not been received.
Data linking	The data link is being executed.
Data link stopping	The data link has stopped.
Disconnecting (Not poling)	There is no inquiry from the master station and the link is disconnected.
Disconnecting (Line Error)	The link is disconnected due to an error in the line.
Disconnecting (others)	The link is disconnected due to other reasons.
Line testing	A line test is being performed.
Parameter Set testing	A test is being performed on the parameter settings from the master station.
Automatic returning	A return is automatically being processed.
Resetting	The board is being reset.

Item		Description
Error Status		Monitors and displays the error status.

Display	Contents
Normal	Normal status
Transmission Error	Error in communication path was detected.
Parameter Error	Error in parameters was detected.
CRC Error	CRC error was detected.
Time Out Error	Timeout error was detected.
Abort Error	An error in the CC-Link board (gate array) was detected.
Setting Error	Error in the setting was detected.
Other Error	Error arising from some other cause was detected.

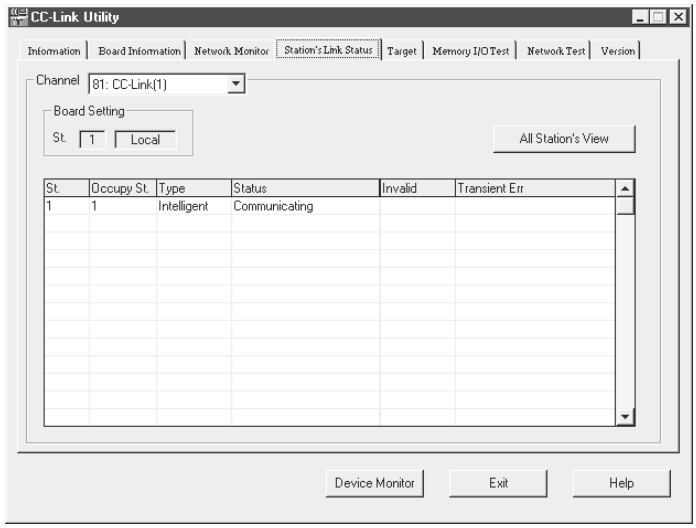
Item		Description
Link Scan Time	Max	Displays the maximum value for the link scan time. (1 ms unit)
	Current	Displays the current value for the link scan time. (1 ms unit)
	Min	Displays the minimum value for the link scan time. (1 ms unit)

7.2.5 Operations on Station's Link Status screen

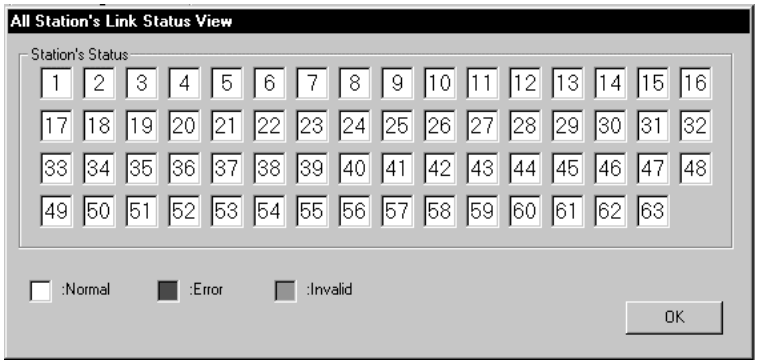
Displays the line status of another station.

POINT

(1) The Station's Link Status only monitors when the host status is "data linking."
(2) To restart monitoring after monitoring stops due to an error, display a screen other than the " Station's Link Status" screen first, and then display the "Station's Link Status" screen again.

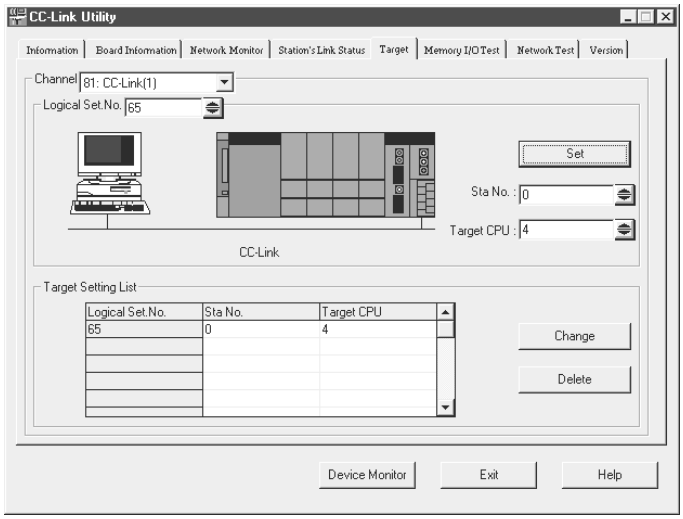


Item		Description
Channel		Sets the channel to be used.
Board Setting		Displays information on the host.
Other Station Status	St.	Displays the station number that has been set.
	Occupy St.	Displays the number of stations occupied.
	Type	Displays the type of the station that is set. Display: Remote Device — Contents: Remote device station Display: Remote I/O — Contents: Remote I/O station Display: Intelligent — Contents: Intelligent station, local station
	Status	Displays the status of another station. Display: Communicating — Contents: Normal Display: Communication interrupted — Contents: Communication is stopped Display: Link error — Contents: There is a link error Display: WDT error — Contents: A watchdog timer error occurred Display: Fuse brake off — Contents: A station has blown a fuse Display: Repeated station — Contents: There are duplicate station numbers Display: Moved switch — Contents: Switch was changed
	Invalid	Displays the station with an error invalid. Display: Error invalid station — Contents: There is a setting Display: (Free) — Contents: No setting
	Transient Err	Displays the status of a transient error. Display: Transient Error — Contents: There is an error Display: (Free) — Contents: No error

Item	Description
All Station View button	A list of communication status for other stations is displayed. When a reserve station has been set in the data link parameter that is to set in the master station, the reserve station is displayed as a normal communication station in the following list of other station communication statuses. 

7.2.6 Operations on Target screen

Set the logical station number to access a multiple PLC system.

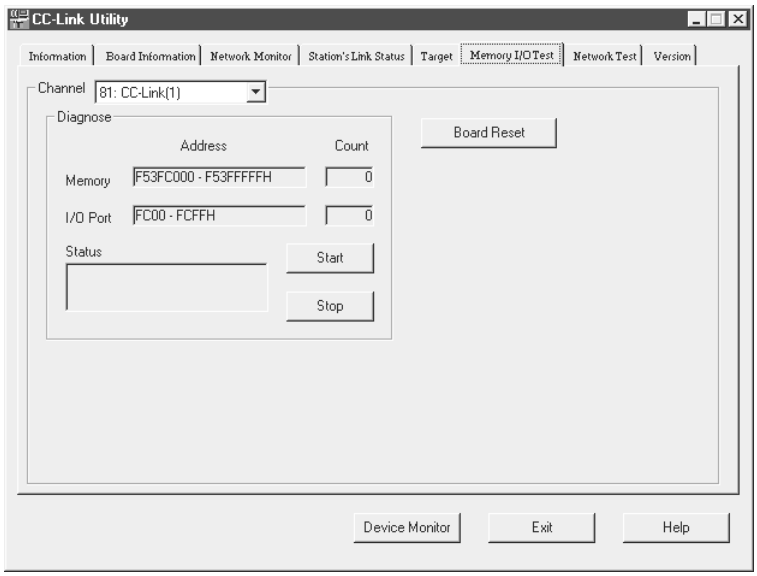


Item	Description
Channel	Select the channel for setting the destination.
Logical Set No.	Enter the logical station number to be set or modified (setting range: 65 to 239).
Sta. No.	Enter the station number of a QJ61BT11 that is controlled by a multiple PLC system.
Target CPU	Enter the target PLC to be accessed.
Set button	Register the contents of the setting to the destination list.
Change button	Select the line to be changed, then click this button to modify the registered data. (The same operation will result by double-clicking the line to be changed.)
Delete button	Select the line to be deleted, then click this button to delete the registered station number.

7.2.7 Operations on Memory I/O Test screen

Diagnoses the dual-port memory and I/O port used by the CC-Link board.

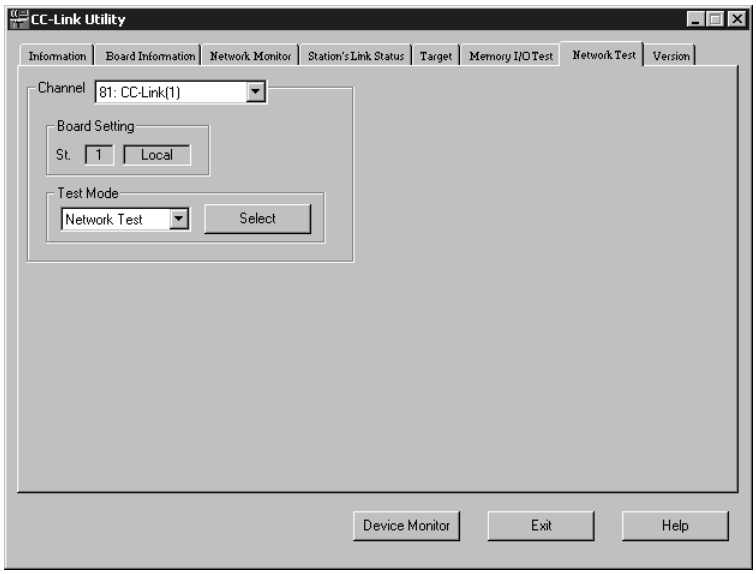
POINT
(1) Start the diagnostic operation after disconnecting the external cable. (2) To switch the screens during the diagnostic operation, click the Stop button to terminate the diagnosis and then switch screens.

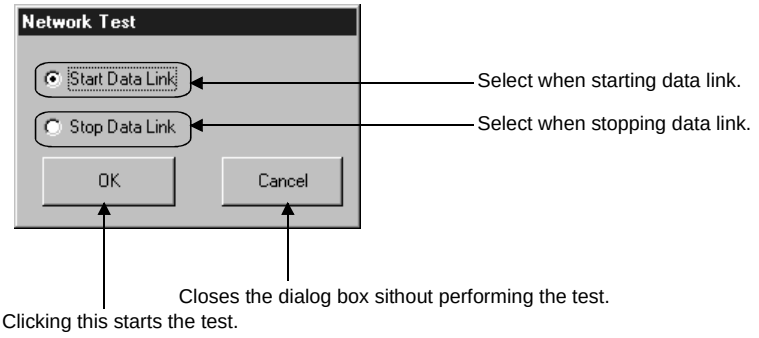


Item	Description
Channel	Set the channel to be used.
Diagnose	Displays the address being diagnosed and number of the diagnosis and status.
Start button	Starts the memory and I/O diagnosis.
Stop button	Terminates the memory and I/O diagnosis.
Board Reset button	Resets the CC-Link board.

7.2.8 Operations on Network Test screen

Tests the CC-Link board that is loaded.



Item	Description
Channel	Sets the channel to be used.
Board Setting	Displays information on the host.
Test Mode	Sets the items to be tested. Item: Network Test — Setting: Performs a test for data link start and stop.
Start button	The following dialog box is displayed by clicking. 

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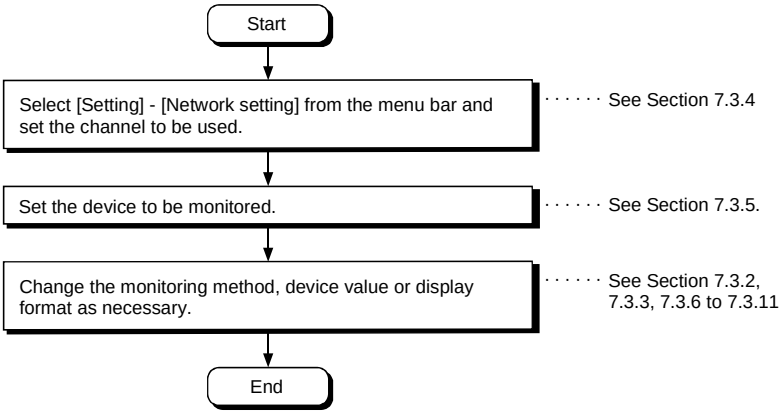
7.3 Device Monitor Utility

This section explains how to operate and set the device monitor utility.

POINT
In the device monitor utility, SB (link special relay) and SW (link special register) are indicated as SM and SD, respectively.

7.3.1 Operation procedure

The following explains how to operate the device monitor utility.


Start
Select [Setting] - [Network setting] from the menu bar and set the channel to be used.
See Section 7.3.4
Set the device to be monitored.
See Section 7.3.5.
Change the monitoring method, device value or display format as necessary.
See Section 7.3.2, 7.3.3, 7.3.6 to 7.3.11
End

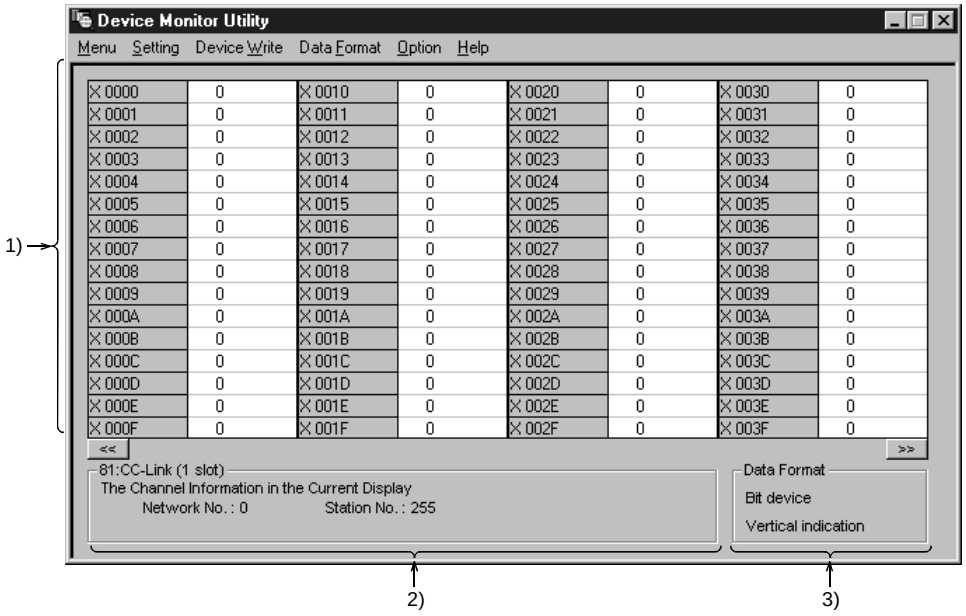
7.3.2 Setting as batch monitoring

Monitors only one device that has been specified.

(1) Selecting the menu

Select [Menu] – [Batch monitor] from the menu bar.
(Selectable for 16-point register monitor only.)

(2) Display screen



Item	Description
1) Device information	Displays the current device status. See Section 7.3.9 when the display form is changed.
2) Network status	Displays the network status currently set. See Section 7.3.4 when the network is set.
3) Data Format	Shows a display form and device types being displayed (word device and bit device). See Section 7.3.5 when the device type is changed. And, see Section 7.3.9 when the display form is changed.

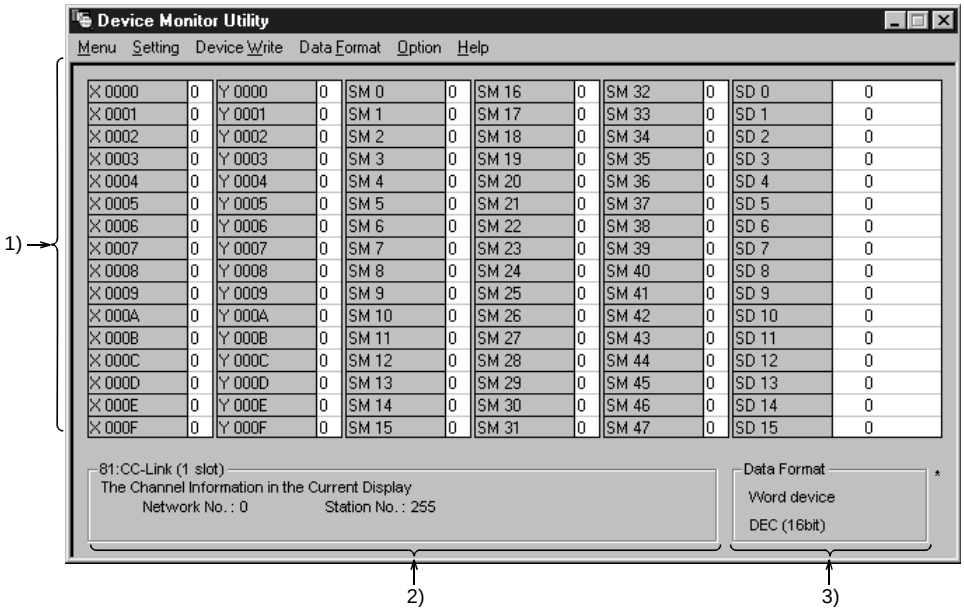
7.3.3 Setting as 16 point register monitor

Monitors up to five bit devices and one word device simultaneously.

(1) Selecting the menu

Select [Menu] – [16 point register monitor] from the menu bar.
(Selectable at batch monitoring only.)

(2) Display screen



Item	Description
1) Device information	Displays the current device status. See Section 7.3.9 when changing the display form.
2) Network status	Displays the network status currently set. See Section 7.3.4 when setting the network.
3) Data Format	Shows a display form and device types being displayed (word device and bit device). See Section 7.3.5 when changing the device type. And, see Section 7.3.9 when changing the display form.

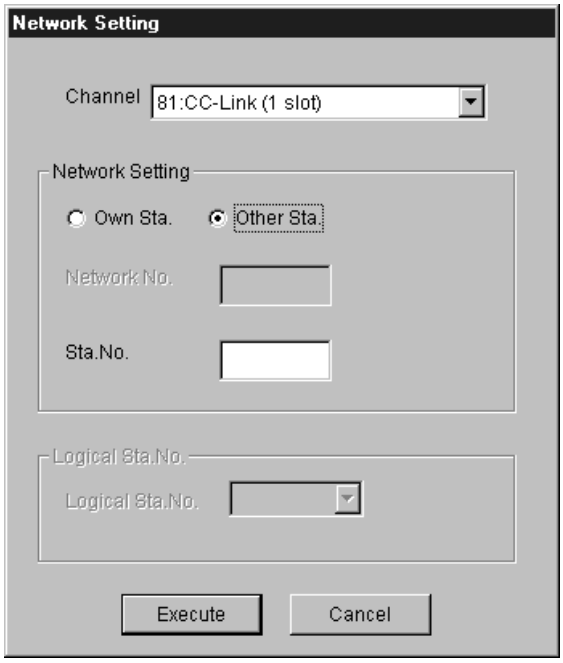
7.3.4 Setting the monitoring destination

Sets the network to be used for device monitoring.
Set this when starting the device monitor utility.

(1) Selecting the menu

Select [Setting] – [Network Setting] from the menu bar.

(2) Dialog box



Item	Description
Channel	Sets the channel to be used.
Network Setting	Sets the host and other stations along with network number and station number.

POINT

(1) To access a multiple PLC system, select other station, then enter the value of the "logical station number" set with the CC-Link utility for the station number.
(2) Do not specify a CC-Link remote I/O station or intelligent device station as the monitor destination.
Specifying a remote I/O station or intelligent device station generates a corresponding error.
(3) When own station is selected in the network setting, network No. "0" and station No. "255" are displayed as the network status.

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7.3.5 Setting the device to monitor

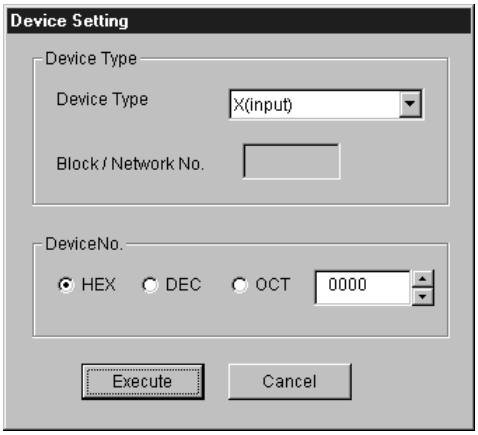
Set the device to perform monitoring.

(1) Selecting the menu

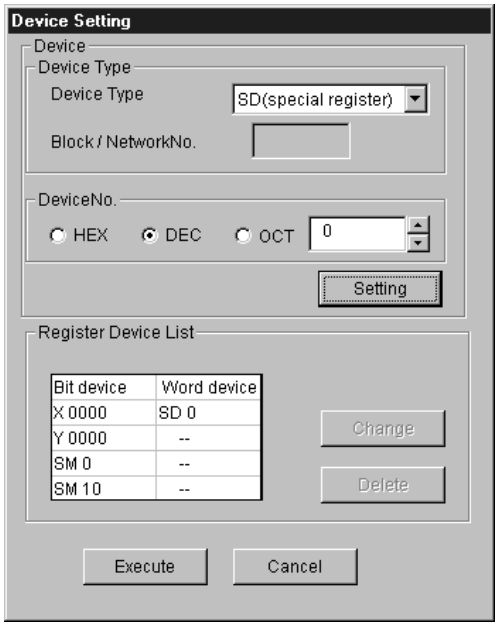
Select [Setting] – [Device Setting] from the menu bar.

(2) Dialog box

Batch monitoring



16-points registration monitoring



Item	Description
Device Type	Sets the device type, block number, and network number to monitor. And, to monitor the host station device on the CC-Link board, set as follows. Host station device to monitor / Device type to specify: RX / X RY / Y SB / SM SW / SD RWw / Ww Rwr / Wr Random access buffer / MRB Buffer memory / SPB
Device No.	Sets the head number of device to monitor. (HEX: Hexadecimal, DEC: Decimal, OCT : Octal)
Register Device List	Displays a list of the devices entered .
[Setting] button	Enters the data set in device type and device number, and adds them to register device list.
[Change] button	Selects the device to change, and click this button to change the entered data.
[Delete] button	Selects the device to be deleted, and click this button to delete from the register device list.

POINT

The only devices that may be monitored using the 16-point entry monitor are those that have random access capability. If a device that is not capable of random-access is specified, a device type error (-3) will occur.
See Chapter 8, "ACEESSIBLE DEVICES AND RANGES," to determine whether or not a device has random-access capability.

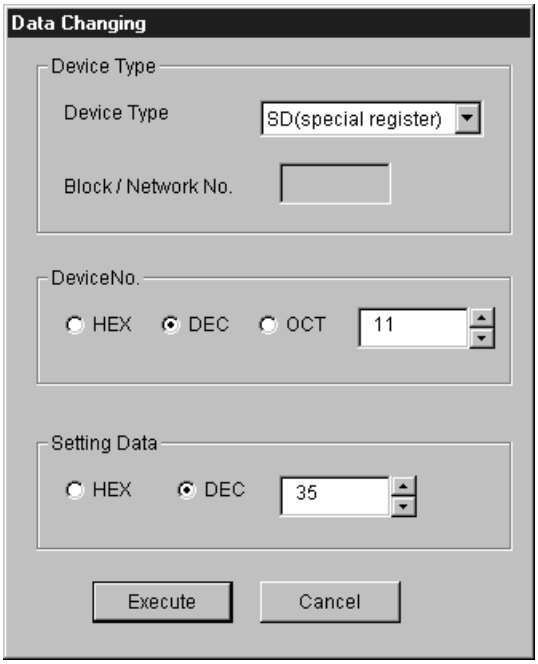
7.3.6 Changing word device values

Changes the specified word device data.

(1) Selecting the menu

Select [Device Write] – [Data Changing] from the menu bar.

(2) Dialog box



Item	Description
Device Type	Sets the device type, block number, and network number to change the data.
Device No.	Sets the device number to change the data. (HEX : Hexadecimal, DEC : Decimal, OCT : Octal)
Setting Data	Sets the data to be changed. (HEX : Hexadecimal, DEC : Decimal)

DANGER

- Configure the interlock circuit over the sequence program so that the entire system works safely at all times for data change control to the PLC in operation.
  Also, decide on corrective actions for an event of data communication error between the PC and PLC CPU in use.

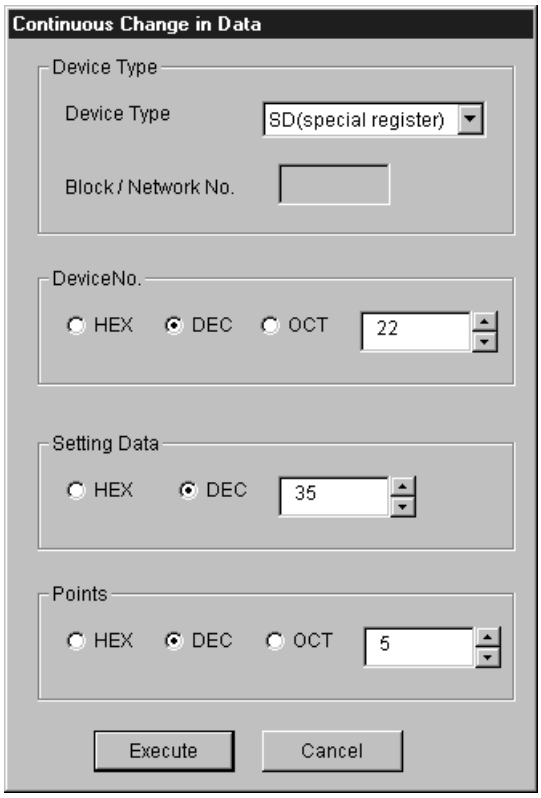
7.3.7 Changing word device values continuously

Change the specified word device data for the number of specified points being set.

(1) Selecting the menu

Select [Device Write] – [Continuous Change in Data] from the menu bar.

(2) Dialog box



Item	Description
Device Type	Sets the device type, block number, and network number to change the data.
Device No.	Sets the head address to change the data. (HEX : Hexadecimal, DEC : Decimal, OCT : Octal)
Setting Data	Sets the data to be continuously changed. (HEX : Hexadecimal, DEC : Decimal)
Points	Sets the number of points to perform continuos change of the data. (HEX : Hexadecimal, DEC : Decimal, OCT : Octal)

DANGER

- Configure the interlock circuit over the sequence program so that the entire system works safely at all times for data change control to the PLC in operation.
  Also, decide on corrective actions for an event of data communication error between the PC and PLC CPU in use.

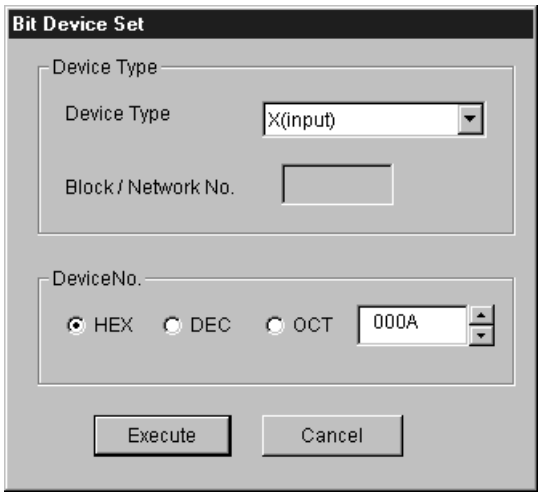
7.3.8 Tuning on/off a bit device

Turns on/off the specified bit device.

(1) Selecting the menu

Select [Device Write] – [Bit Device Setting (reset)] from the menu bar.

(2) Dialog box



Item	Description
Device Type	Sets the bit device type, block number, and network number to turn on/off.
Device No.	Sets the bit device number to turn on/off. (HEX : Hexadecimal, DEC : Decimal, OCT : Octal)

DANGER

- Configure the interlock circuit over the sequence program so that the entire system works safely at all times for data change control to the PLC in operation.
  Also, decide on corrective actions for an event of data communication error between the PC and PLC CPU in use.

7.3.9 Switching the display form

Switches the display form for device monitor to the selected display form.
The batch monitoring and 16 point entry monitor have different sets of selectable menu.

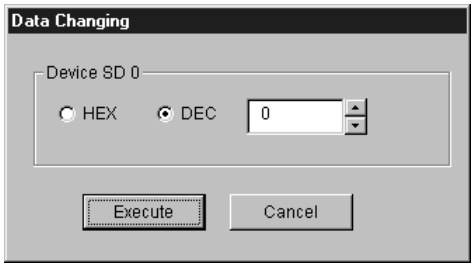
(1) Selecting the menu

Select [Display switch] – [Word (Bit) Device] from the menu bar.

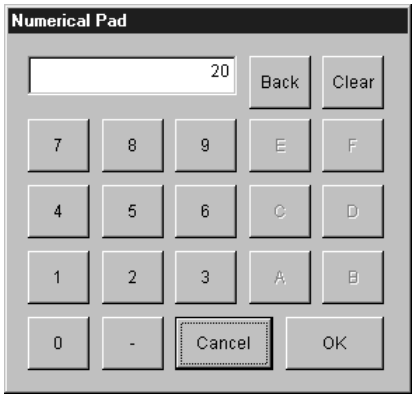
7.3.10 About the Numerical Input pad

By choosing [Option]-[Numerical Pad] on the menu bur, you can use the numerical pad when setting the device value, etc.

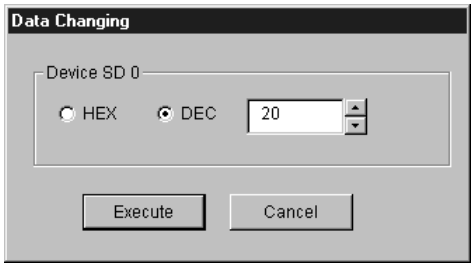
1. Click the numerical input column.



2. As the Numerical Pad appears, enter the value with the buttons.
   Then, click the OK button.



3. The value is entered.



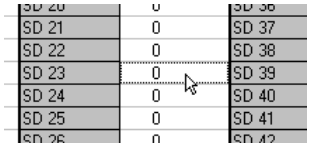
7.3.11 Other operations

Changing data in word device and turning on/off a bit device can be performed by double-clicking the device number on the screen while monitoring.

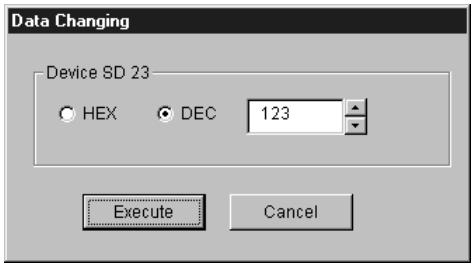
(1) Word device

The following shows the operation for changing a word device.
(Only when the display form is 16 bit.)

1. Double-click the number of the word device to be changed.



2. As the dialog box shown below is displayed, set any desirable value.
   Then, click the [Execute] button.



3. Select [Yes] in the dialog box shown below if the change is acceptable. Select [No] to cancel it.

⚠DANGER	• Configure the interlock circuit over the sequence program so that the entire system works safely at all times for data change control to the PLC in operation. Also, decide on corrective actions for an event of data communication error between the PC and PLC CPU in use.

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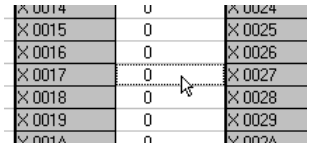
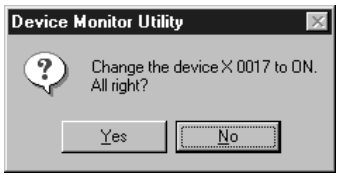
(2) Bit device

The following shows the operation for turning on/off a bit device.
However, this is operable only when the display form is "Portrait."

1. Double-click the number of the bit device to be changed.



2. Select [Yes] in the dialog box shown below, if the change is acceptable.
   Select [No] to cancel it.



DANGER

- Configure the interlock circuit over the sequence program so that the entire system works safely at all times for data change control to the PLC in operation.
  Also, decide on corrective actions for an event of data communication error between the PC and PLC CPU in use.

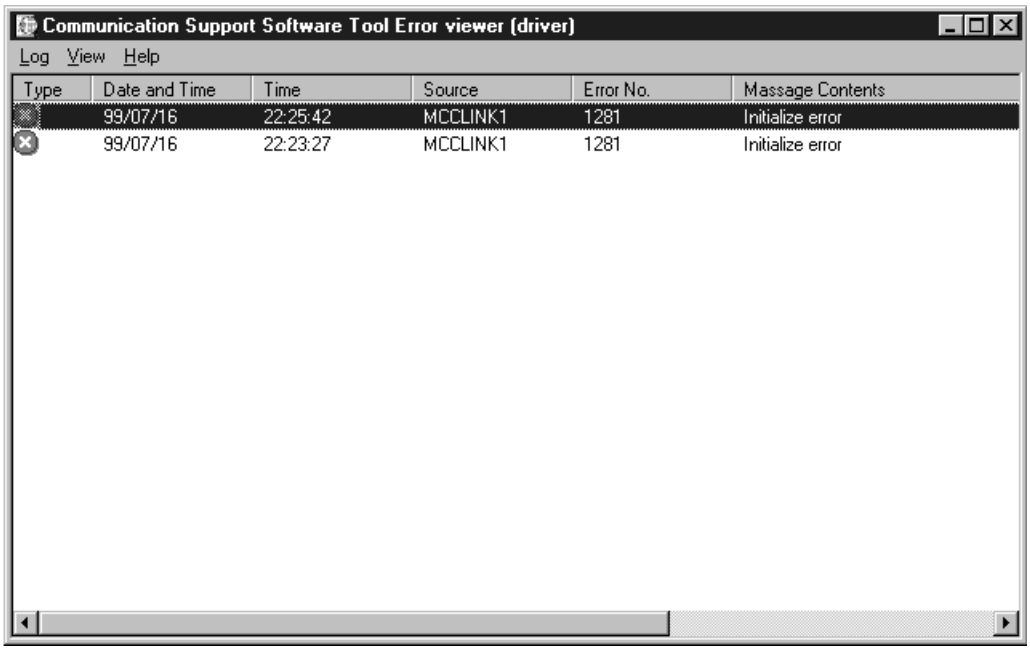
7.4 Error Viewer

This section explains how to operate or set the error viewer.

POINT
Error Viewer can be used only when the operating system (OS) is either Windows® 98 or Windows® 95.

7.4.1 Screen description

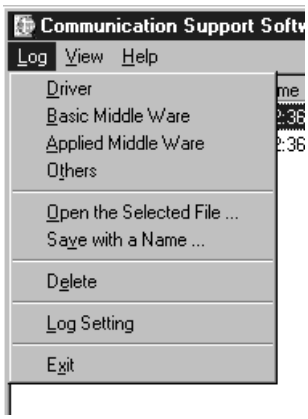
The following explains the error viewer screen.

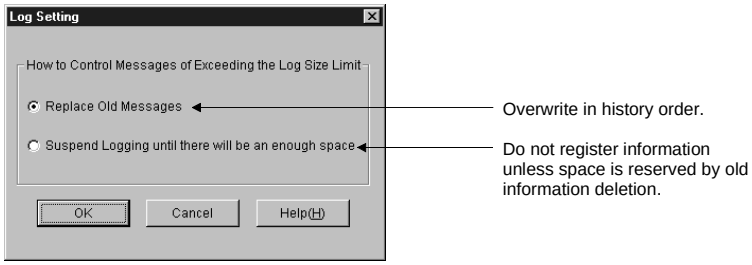


Item	Description
Type	The error types are displayed by symbols shown below. Normal message (Indicates comments that are generated from normal processing.) Warning message (Messages that are generated to elicit attention even though it is not an error.) Error message (Displays the error contents that are generated from each module. For the lines with this symbol, double-click to see the detailed message contents, and remove the cause promptly.)
Date and Time	Displays the date an error occurred.
Time	Displays the time an error occurred.
Source	Displays the source of an error.
Error No.	Displays the number for an error.
Message Contents	Displays the content of an error.

7.4.2 Log menu

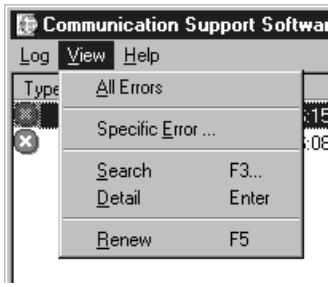
The following explains the contents of log menu.

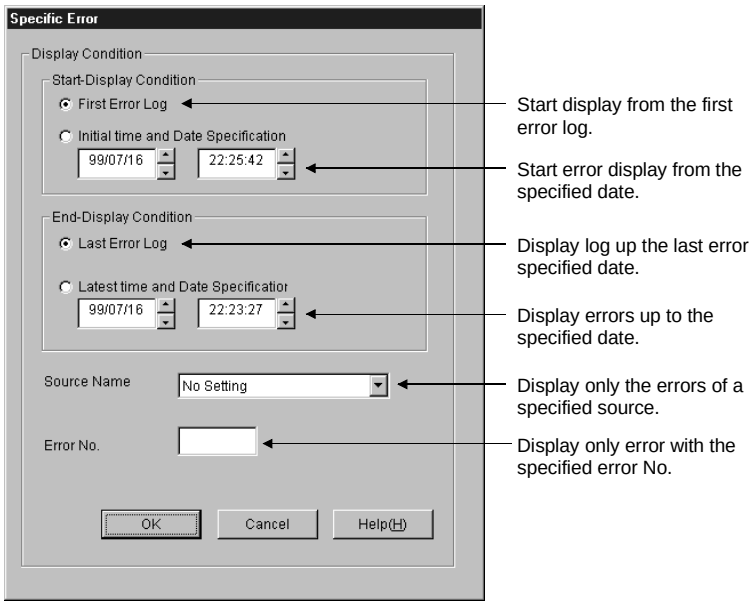
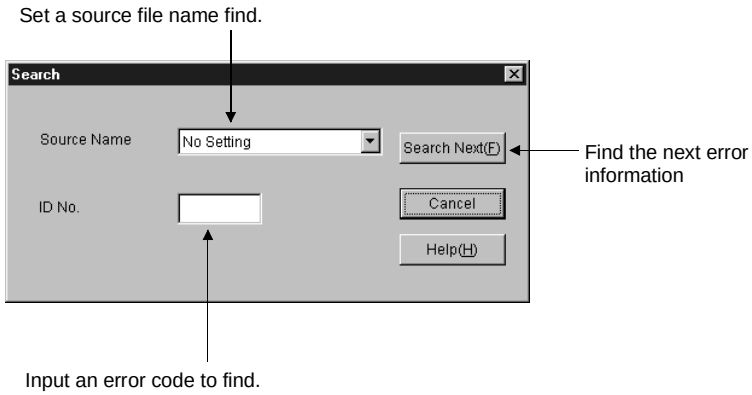


Item	Description
Selecting error-entry source type	Select the error-entry source type to be displayed in the error viewer. The currently selected items are checked. **Driver** • • • • • • • • • • • • Displays the messages generated by drivers such as common memory device. **Basic Middle Ware** • • • • Displays the messages generated by the common memory data server and tab control process. **Applied Middle Ware** • • Displays the messages generated by MX Chart and MX Monitor. **Others** • • • • • • • • • • • • Displays the messages generated by the application packages.
Open the Selected File	Open the error log file (*.ELF).
Save with a Name	Save the error log data of the error entry source (driver, etc. ...) currently being selected to the specified file.
Delete	Erase the error log data of the error entry source (driver, etc. ...) currently being displayed. Perform operations according to direction displayed on the dialog box.
Log Setting	Select processing method for which the number of error logs exceeds the number of maximum entry. 
Exit	End the error viewer.

7.4.3 View menu

The following explains the contents of display menu.



Item	Description
All Errors	Displays all the errors that occurred per type of error entry source.
Specific Error	Sets the errors displayed on the screen according to the conditions in the dialog box shown below. 
Search	Search error information of the source name and error code from the error log data currently being displayed using the dialog box shown below. (pressing the F3 key will display the same.) 

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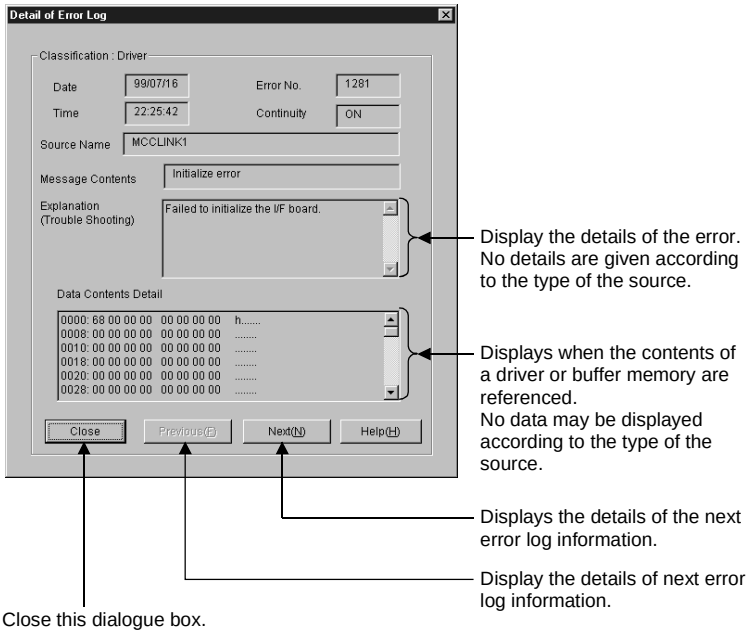
Item	Description
Detail	Displays detailed information on the error log currently being selected. (pressing the Enter key after selecting a display item will display the same.)  Detail of Error Log Classification : Driver Date 99/07/16 Error No. 1281 Time 22:25:42 Continuity ON Source Name MCCLINK1 Message Contents Initialize error Explanation (Trouble Shooting) Failed to initialize the I/F board. Data Contents Detail 0000: 68 00 00 00 00 00 00 00 h..... 0008: 00 00 00 00 00 00 00 00 ..... 0010: 00 00 00 00 00 00 00 00 ..... 0018: 00 00 00 00 00 00 00 00 ..... 0020: 00 00 00 00 00 00 00 00 ..... 0028: 00 00 00 00 00 00 00 00 ..... Close Previous(P) Next(N) Help(H) Display the details of the error. No details are given according to the type of the source. Displays when the contents of a driver or buffer memory are referenced. No data may be displayed according to the type of the source. Displays the details of the next error log information. Display the details of next error log information. Close this dialogue box.
Renew	Updates the data currently being displayed.

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8 ACCESSIBLE DEVICES AND RANGES

This chapter describes the devices and ranges that can be accessed during CC-Link communication.

8.1 Accessible Devices

The following lists the devices that can be accessed during CC-Link communication.

POINT
The "Batch" in the following table indicates Batch Read and Batch Write. The "Random" in the table indicates Random Read, Random Write, Bit Set, or Bit Reset.

8.1.1 Host (personal computer (local station equivalent))

Device		Accessible/not accessible
X (RX)	Batch	○
	Random	
Y (RY)	Batch	○
	Random	
SB	Batch	○
	Random	
SW	Batch	○
	Random	
Ww (RWw)	Batch	○
	Random	
Wr (RWr)	Batch	○
	Random	
SPB (Host buffer memory)	Batch	○
	Random	
MRB (Host random access buffer)	Batch	○
	Random	

8.1.2 Other station

Device		Access destination							
		A1N	A0J2H A1S(-S1) A1SH A1SJ(-S3) A1SJH(-S8) A2C(J) A2N(-S1) A2S(-S1) A2SH(-S1)	A2A(-S1) A2U(-S1) A2AS(-S1/-S30) A2USH-S1 Q02(H)-A Q06H-A	A3N A3A A3U	A4U	Q2A(-S1) Q3A Q4A Q4AR Q2AS(-S1) Q2ASH(-S1)	Q00J Q00 Q01 Q02(H) Q06H Q12H Q25H Q12PH Q25PH	IBM PC/AT compatible PC
X	Batch	○	○	○	○	○	○		×
	Random								
Y	Batch	○	○	○	○	○	○		×
	Random								
L	Batch	○	○	○	○	○	○		×
	Random								
M	Batch	○	○	○	○	○	○		×
	Random								
Special M (SM), SB	Batch	○	○	○	○	○	○		×
	Random								
F	Batch	○	○	○	○	○	○		×
	Random								
T (contact)	Batch	○	○	○	○	○	○		×
	Random						×		
T (coil)	Batch	○	○	○	○	○	○		×
	Random						×		
C (contact)	Batch	○	○	○	○	○	○		×
	Random						×		
C (coil)	Batch	○	○	○	○	○	○		×
	Random						×		
T (present value)	Batch	○	○	○	○	○	○		×
	Random								
C (present value)	Batch	○	○	○	○	○	○		×
	Random								
D	Batch	○	○	○	○	○	○		×
	Random								
Special D (SD), SW	Batch	○	○	○	○	○	○		×
	Random								
T (set value main)	Batch	○	○	○	○	○	×		×
	Random	×	×	×	×	×			
T (set value sub 1)	Batch	×	×	○ *1	○	○	×		×
	Random			×	×	×			
T (set value sub 2)	Batch	×	×	×	×	○	×		×
	Random					×			
T (set value sub 3)	Batch	×	×	×	×	○	×		×
	Random					×			

*1 : A2ACPU(-S1) cannot be accessed.

8

Device		Access destination							
		A1N	A0J2H A1S(-S1) A1SH A1SJ(-S3) A1SJH(-S8) A2C(J) A2N(-S1) A2S(-S1) A2SH(-S1)	A2A(-S1) A2U(-S1) A2AS(-S1/-S30) A2USH-S1 Q02(H)-A Q06H-A	A3N A3A A3U	A4U	Q2A(-S1) Q3A Q4A Q4AR Q2AS(-S1) Q2ASH(-S1)	Q00J Q00 Q01 Q02(H) Q06H Q12H Q25H Q12PH Q25PH	IBM PC/AT compatible PC
C (set value main)	Batch	○	○	○	○	○	×		×
	Random	×	×	×	×	×			
C (set value sub 1)	Batch	×	×	○ ＊1	○	○	×		×
	Random			×	×	×			
C (set value sub 2)	Batch	×	×	×	×	○	×		×
	Random					×			
C (set value sub 3)	Batch	×	×	×	×	○	×		×
	Random					×			
A	Batch	○	○	○	○	○	×		×
	Random								
Z	Batch	○	○	○	○	○	○		×
	Random								
V (index register)	Batch	○	○	○	○	○	×		×
	Random								
R (file register)	Batch	×	○	○	○	○	○ ＊2		×
	Random								
ER (extended file resister)	Batch	×	○	○	○	○	○ ＊2		×
	Random								
B	Batch	○	○	○	○	○	○		×
	Random								
W	Batch	○	○	○	○	○	○		×
	Random								
Q/QnA link special relay (within Q/QnA CPU)	Batch	×	×	×	×	×	○		×
	Random								
Retentive timer (contact)	Batch	×	×	×	×	×	○		×
	Random						×		
Retentive timer (coil)	Batch	×	×	×	×	×	○		×
	Random						×		
Q/QnA link special register (within Q/QnA CPU)	Batch	×	×	×	×	×	○		×
	Random								
Q/QnA edge relay (within Q/QnA CPU)	Batch	×	×	×	×	×	○		×
	Random								
Host random-access buffer	Batch	×	×	×	×	×	×		×
	Random								
Retentive timer (present value)	Batch	×	×	×	×	×	○		×
	Random								
Host link register (for transmission)	Batch	×	×	×	×	×	×		×
	Random								
Host link register (for reception)	Batch	×	×	×	×	×	×		×
	Random								
Q/QnA SEND function (Arrival acknowledgment)	Batch	×	×	×	×	×	×		×
	Random								

＊1 : A2ACPU(-S1) cannot be accessed.

＊2 : No access is allowed in the case of the Q00JCPU.

Device		Access destination							
		A1N	A0J2H A1S(-S1) A1SH A1SJ(-S3) A1SJH(-S8) A2C(J) A2N(-S1) A2S(-S1) A2SH(-S1)	A2A(-S1) A2U(-S1) A2AS(-S1/-S30) A2USH-S1 Q02(H)-A Q06H-A	A3N A3A A3U	A4U	Q2A(-S1) Q3A Q4A Q4AR Q2AS(-S1) Q2ASH(-S1)	Q00J Q00 Q01 Q02(H) Q06H Q12H Q25H Q12PH Q25PH	IBM PC/AT compatible PC
Q/QnA SEND function (Arrival acknowledgment)	Batch	×	×	×	×	×	×		×
	Random								
Direct link input	Batch	×	×	×	×	×	○		×
	Random								
Direct link output	Batch	×	×	×	×	×	○		×
	Random								
Direct link relay	Batch	×	×	×	×	×	○		×
	Random								
Direct link register	Batch	×	×	×	×	×	○		×
	Random								
Direct link special relay (network module side)	Batch	×	×	×	×	×	○		×
	Random								
Direct link special register (network module side)	Batch	×	×	×	×	×	○		×
	Random								
Special direct buffer register	Batch	×	×	×	×	×	○		×
	Random						×		
Other station buffer memory ＊3	Batch	○	○	○	○	○	○		○
	Random	×	×	×	×	×	×		×
Other station random access buffer＊3	Batch	○	○	○	○	○	○		○
	Random	×	×	×	×	×	×		×
Other station RX ＊3	Batch	○	○	○	○	○	○		○
	Random	×	×	×	×	×	×		×
Other station RY ＊3	Batch	○	○	○	○	○	○		○
	Random	×	×	×	×	×	×		×
Other station link register＊3	Batch	○	○	○	○	○	○		○
	Random	×	×	×	×	×	×		×
Other station SB ＊3	Batch	○	○	○	○	○	○		○
	Random	×	×	×	×	×	×		×
Other station SW ＊3	Batch	○	○	○	○	○	○		○
	Random	×	×	×	×	×	×		×

＊3 : Access to the CC-Link (intelligent device station) module buffer memory installed into each CPU.

8.2 Accessible Range

The range of access during CC-Link communication includes only the module master station, local station PLC and the intelligent device station for the CC-Link connected by the CC-Link board, and PC with CC-Link board installed.

9 MELSEC DATA LINK LIBRARY

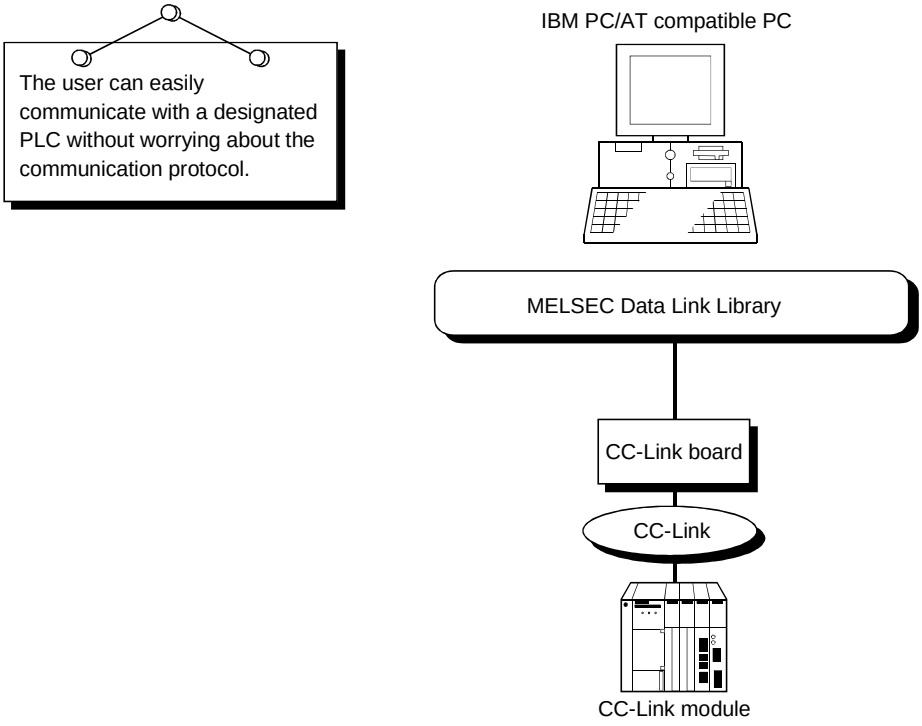
This chapter describes the functional overview of the functions included in the library.

REMARK

The screens of the Microsoft® Windows® 95 Operating System are used in this section.
Please note that these screens are slightly different from other Operating systems.

9.1 Overview of the MELSEC Data Link Library

These functions are used when creating a user program that communicates with a PLC CPU. With the functions, the user can perform communication without being conscious of the hardware type on the opposite side or the communication protocol.


The user can easily communicate with a designated PLC without worrying about the communication protocol.
IBM PC/AT compatible PC
MELSEC Data Link Library
CC-Link board
CC-Link
CC-Link module

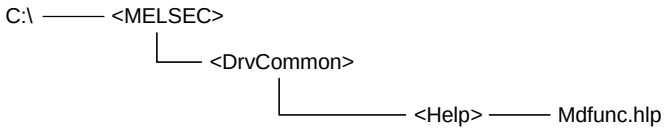
9.2 Function List

The following table lists the functions comprising the MELSEC data link library that is provided with the software package.

Function name	Description
mdOpen	Opens a communication line.
mdClose	Closes a communication line.
mdSend	Performs batch write of devices.
mdReceive	Performs batch read of devices.
mdRandW	Writes devices randomly.
mdRandR	Reads devices randomly.
mdDevSet	Sets a bit device.
mdDevRst	Resets a bit device.
mdTypeRead	Reads the type of PLC CPU.
mdControl	Remote RUN/STOP/PAUSE
mdInit	Refreshes the PLC device address.
mdBdRst	Resets the board itself.
mdBdModSet	Sets the board itself.
mdBdModRead	Reads the board itself.
mdBdLedRead	Reads the LED information of the board itself.
mdBdSwRead	Reads the switch status of the board itself.
mdBdVerRead	Reads the version information of the board itself.

POINT

For details of the functions, see HELP on MELSEC data link functions provided in the software package.
The HELP on MELSEC data link functions can be found in the following directory.



9 - 2

9.3 Settings for Using Functions

This section describes the setting operation in order to use functions.

POINT
If Windows® 2000 Professional or Windows® XP Professional is used, Microsoft® Visual Basic® 5.0 and Microsoft® Visual C++® 5.0 cannot be used. Please use Microsoft® Visual Basic® 6.0 and Microsoft® Visual C++® 6.0.

9.3.1 When using Visual Basic® 5.0 and Visual Basic® 6.0

The following describes the setting operation when using Visual Basic® 5.0 and Visual Basic® 6.0.

1. Start Visual Basic® 5.0 or Visual Basic® 6.0 and select [Project] - [Add standard module] menu.

2. Select the "Existing files" tab and select "MDFUNC.BAS. "
   "MDFUNC.BAS" has been saved in the following directory during installation:
   <User-specified folder>-<COMMON>-<INCLUDE>

9.3.2 When using Visual C++® 5.0 and Visual C++® 6.0

The following describes the setting operation when using Visual C++® 5.0 and Visual C++® 6.0.

(1) When setting an include file

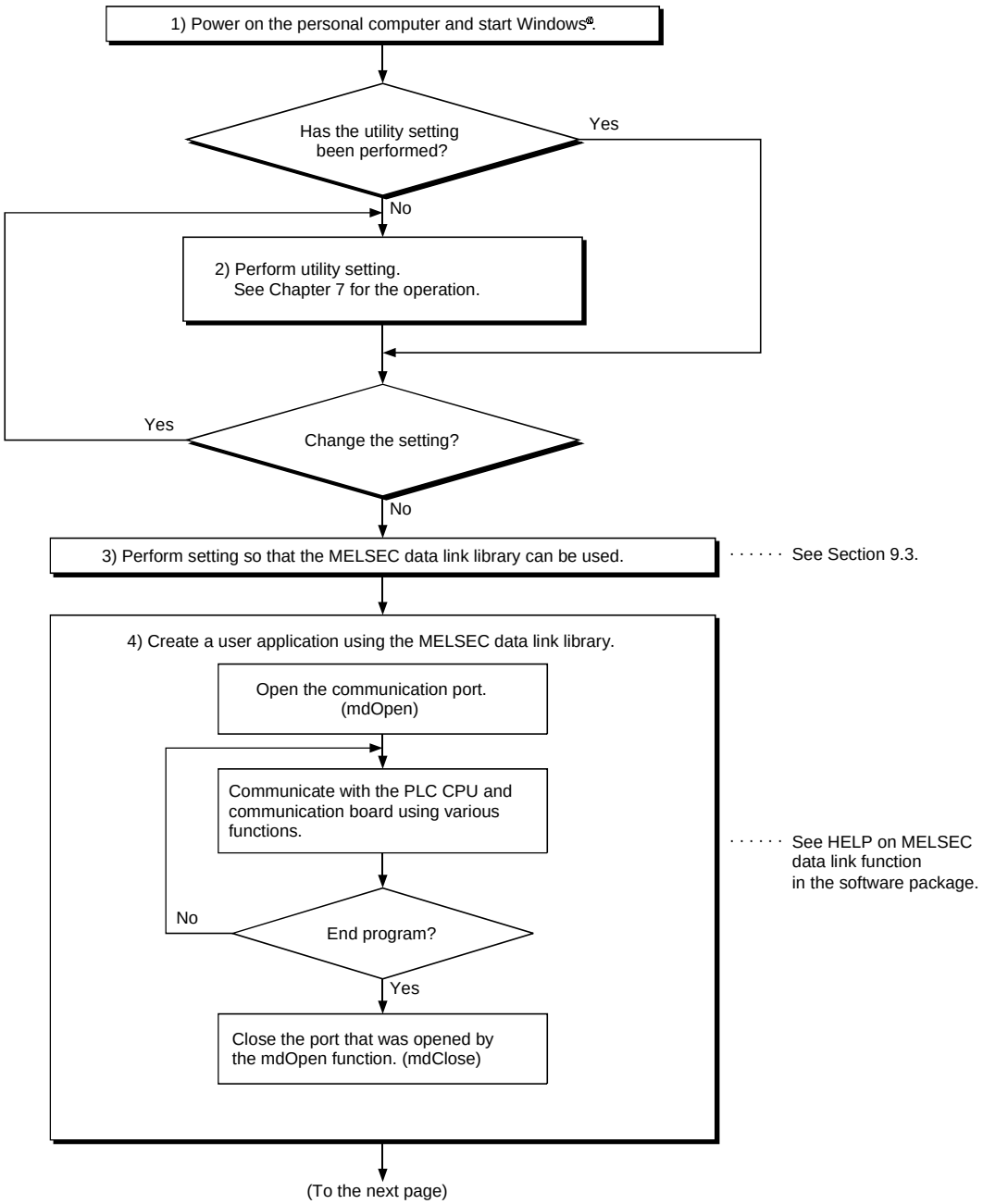
1. Start Visual C++® 5.0 or Visual C++® 6.0 and select [Tool]-[Option] menu.
2. Select the "Directory" tab and set the directory type to "Include files. "
3. Double-click the item to be set and reference the folder containing the include file.
   MDFUN.H has been save in the following directory during installation:
   <User-specified folder>-<COMMON>-<INCLUDE>
4. Add "#include<mdfunc.h>" at the beginning of your program.

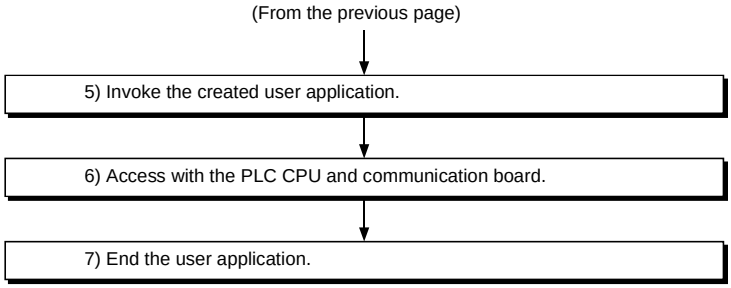
(2) When setting a library file

1. Start Visual C++® 5.0 or Visual C++® 6.0 and select [Tool]-[Option] menu.
2. Select the "Directory" tab, set "Directory to be displayed" to "Library file," and reference the folder containing the library file, as in step (1) above.
   "MDFUNC32.LIB" is stored in
   <User-specified folder>-<COMMON>-<LIB>
   during installation.
3. Open the workspace to create and select [Project]-[Set] menu.
4. Select the "Link" tab, set "General" as the category, then type "mdfunc32.lib" in the object/library module field.

9.4 Procedure for Programming

The following describes the procedure for programming using the MELSEC data link library.
In this section, it is assumed that the software package has already been installed.


1) Power on the personal computer and start Windows®.
Has the utility setting been performed?
Yes
No
2) Perform utility setting.
See Chapter 7 for the operation.
Yes
Change the setting?
No
3) Perform setting so that the MELSEC data link library can be used.
See Section 9.3.
4) Create a user application using the MELSEC data link library.
Open the communication port. (mdOpen)
Communicate with the PLC CPU and communication board using various functions.
See HELP on MELSEC data link function in the software package.
No
End program?
Yes
Close the port that was opened by the mdOpen function. (mdClose)
(To the next page)


(From the previous page)
5) Invoke the created user application.
6) Access with the PLC CPU and communication board.
7) End the user application.

POINT

(1) Perform the processing for opening and closing a communication line (mdOpen/ mdClose) only once at the beginning and end of a program.
Repeatedly opening and closing a communication line for each transaction will degrade the communication performance.

(2) It is necessary to perform only steps 5) to 7) above to access the PLC CPU and communication board again using an application program that has already been created by the user.

(3) The functions get detailed PLC information at the initial execution when the corresponding devices are added. Therefore, the initial function execution time gets longer than usual.

(4) When accessing multiple remote stations simultaneously from the same PC using the CC-Link utility, Device Monitor utility, user application program or Mitsubishi's software package (such as MX Links), limit the number of stations to be accessed to eight or less.
If nine or more remote stations are accessed simultaneously, communication performance may deteriorate.

(5) When creating a user application program for debugging using Visual C++© 6.0, do not define the buffer to be used by mdReceive in static.

9.5 Channel

The following is the channel used by the MELSEC data link library:

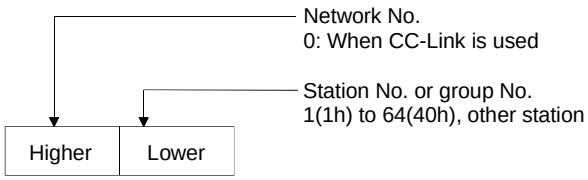
Number	Channel name	Description
81 to 84	CC-Link (1st board to 4th board)	This is used when communication via the CC-Link board. This is set using the BD No. DIP switch on the back of the CC-Link board. The following will be set using the SW1 and SW2 settings. 81: OFF, OFF 82: ON, OFF 83: OFF, ON 84: ON, ON

9.6 Station Number Settings

The following lists the station numbers specified via functions.

Communication	Station number specification
CC-Link	Host: 255 (0xFF) Other station: ∗1, ∗2

∗1 :



<How to specify the logical station number>
Set "0" to the upper byte (network No.) of the station number described above, then specify the logical station number to the lower byte (station number).
The range of the logical station number specification is from 65(41_H) to 239(EF_H).

∗2 : It is impossible to specify the station number 64 on the CC-Link communication except for the buffer memory access.

9.7 Device Types

Either code number or device name can be specified for functions as the device type.

(1) Only when via CC-Link board

The following table shows the CC-Link dedicated device type when accessing to the device via CC-Link board.

Device type		Device name specification	Device
Code specification			
Decimal	Hexadecimal		
1	1H	Dev X	Host RX
2	2H	Dev Y	Host RY
5	5H	Dev SM	Host SB (link special B for CC-Link)
14	EH	Dev SD	Host SW (link special W for CC-Link)
33	21H	Dev MRB	Host random access buffer
36	24H	Dev Ww	Host link register (for transmitting)
37	25H	Dev Wr	Host link register (for receiving)
50	32H	Dev SPB	Host buffer memory
32768	8000H	Dev RBM	Other buffer memory ∗1
32800	8020H	Dev RAB	Other random access buffer ∗1
32801	8021H	Dev RX	Other RX ∗1
32802	8022H	Dev RY	Other RY ∗1
32804	8024H	Dev RW	Other link register ∗1
32867	8063H	Dev SB	Other SB (link special; B for CC-Link) ∗1
32868	8064H	Dev SW	Other SW (link special; W for CC-Link) ∗1

∗1 : Cannot use with mdRandR, mdRandW, mdDevSet and mdDevRst functions.

POINT

To access a random access buffer, a different device type must be specified depending on the random access buffer setting.
Specify a device type shown in the following table, specify an address to the device No., then access the buffer.

Setting	Device type used	Accessible range
Default setting	DevMRB	A00H to FFFH
Extension setting	DevMRB	A00H to FFFH
	DevSPB	A00H to 2FFFH

(2) Common

The following table shows the common device type for all communication course.

Device type		Device name specification	Device
Code specification			
Decimal	Hexadecimal		
1	1H	DevX	X
2	2H	DevY	Y
3	3H	DevL	L
4	4H	DevM	M
5	5H	DevSM	Special M (SM), SB (link special B for MELSECNET/10, MELSECNET/H and CC-Link)
6	6H	DevF	F
7	7H	DevTT	T (contact)
8	8H	DevTC	T (coil)
9	9H	DevCT	C (contact)
10	AH	DevCC	C (coil)
11	BH	DevTN	T (present value)
12	CH	DevCN	C (present value)
13	DH	DevD	D
14	EH	DevSD	Special D (SD), SW (link special W for MELSECNET/10, MELSECNET/H and CC-Link)
15	FH	DevTM	T (set value main)
16	10H	DevTS	T (set value sub 1)
16002	3E82H	DevTS2	T (set value sub 2)
16003	3E83H	DevTS3	T (set value sub 3)
17	11H	DevCM	C (set value main)
18	12H	DevCS	C (set value sub 1)
18002	4652H	DevCS2	C (set value sub 2)
18003	4653H	DevCS3	C (set value sub 3)
19	13H	DevA	A
20	14H	DevZ	Z
21	15H	DevV	V (index register)
22	16H	DevR	R (file register)
22000 to 22256	55F0H to 56F0H	DevER0 to DevER256	ER (extension file register)
23	17H	DevB	B
24	18H	DevW	W
25	19H	DevQSB	Q/QnA link special relay (within the Q/QnA CPU)
26	1AH	DevSTT	Retentive timer (contact)
27	1BH	DevSTC	Retentive timer (coil)
28	1CH	DevQSW	Q/QnA link special register (within the Q/QnA CPU)
30	1EH	DevQV	Q/QnA edge relay (within the Q/QnA CPU)

Device type			Device
Code specification		Device name specification	
Decimal	Hexadecimal		
33	21_H	DevMRB	Host random access buffer ＊1
35	23_H	DevSTN	Retentive timer (present value)
36	24_H	DevWw	Host link register (for transmitting) ＊1
37	25_H	DevWr	Host link register (for receiving) ＊1
40	28_H	DevFS	FXCPU S-device
50	32_H	DevSPB	Host buffer memory ＊1
101	65_H	DevMAIL	Q/QnA SEND/RECV function (Arrival acknowledgment)
102	66_H	DevMAILNC	Q/ QnA SEND/RECV function (No arrival acknowledgment)
1001 to 1255	$3E9_H$ to $4E7_H$	DevLX1 to DevLX255	Direct link input
2001 to 2255	$7D1_H$ to $8CF_H$	DevLY1 to DevLY255	Direct link output
23001 to 23255	$59D9_H$ to $5AD7_H$	DevLB1 to DevLB255	Direct link relay
24001 to 24255	$5DC1_H$ to $5EBF_H$	DevLW1 to DevLW255	Direct link register
25001 to 25255	$61A9_H$ to $62A7_H$	DevLSB1 to DevLSB255	Direct link special relay (network module side)
28001 to 28255	$6D61_H$ to $6E5F_H$	DevLSW1 to DevLSW255	Direct link special register (network module side)
29000 to 29255	7148_H to 7247_H	DevSPGO to DevSPG255	Special direct buffer register
31000 to 31255	7918_H to $7A17_H$	DevEMO to DevEM255	EM (shared device) ＊2
32000 to 32255	$7D00_H$ to $7DFF_H$	DevEDO to DevED255	ED (shared device) ＊2

＊1 : Dedicated device for accessing the buffer memory for the CC-Link board (host).

＊2 : Access is allowed only to a remote station's PC (only if the communication destination is running MX Links (SW2D5F-CSKP-E or later) on Windows NT® Workstation 4.0).

9.8 Sample Programs

When SW4DNF-CCLINK-B is installed in a PC, sample programs are registered in <User-specified folder>-<Cclink>-<Sample>.
Sample programs are provided as a reference for creating user application programs. The user is solely responsible for the use of the sample programs provided.

(1) MasterStation folder

Sample programs for the A80BD-J61BT11 (cannot be used for the A80BD-J61BT13.)

(2) MDFunction folder

(a) Vb folder (for Visual Basic©)

1) Demo folder
Contains a sample program for reading D0.

2) Mtest folder
Contains a sample program for the MELSEC data link library (mdOpen, mdClose, mdSend, mdReceive).

(b) Vc folder (for Visual C++©)

1) Mtest folder

File name	Description
Mtest1.c	Sample program of the general MELSEC data link library
Netsmp1.c	Sample program to read device D of station number 0

10 ERROR CODE

An error code is returned as the return value when a function is executed.
The error definition and corrective action that correspond to each error code are described.

Return value (HEX)	Error definition	Corrective action
0	Normal completion	
1	Driver not started The driver has not been started. The interrupt number/I/O address are overlapping with other board.	Correct the error occurred during driver startup. Check the board setting.
2	Board response error Time out has occurred while waiting for a response to the corrective action.	Check the operation status of the access station(s) and loading condition of the board(s). Retry in an application program.
65 (41H)	Channel error An unregistered channel number was specified.	Check the channel number.
66 (42H)	OPEN error The specified channel has already been opened.	Open only once.
67 (43H)	CLOSE error The specified channel has already been closed.	Close only once.
68 (44H)	PATH error A path other than the opened line was set.	Specify the station with an open path.
69 (45H)	Processing code error An unsupported processing code was issued.	Use the supported processing code.
70 (46H)	Station specification error The specified station is incorrect. A process that should have been requested to other station was requested to the host. Or, the station number corresponds to the host (0xFF) but the network number is not 0.	Correct the specification of the station number in the application program.
71 (47H)	Reception data error (during RECV request) Data has not been received.	Wait until data is received.
72 (48H)	Waiting for mode setting Mode setting has not been performed.	Perform mode setting.
73 (49H)	Mode error Processing was requested to other station when the mode setting was not online.	Set the mode to online. Or, cancel the request.
	Interrupt number error The interrupt number is overlapping with other board.	Check the board setting.
	I/O address error The I/O address is overlapping with other board.	
77 (4DH)	Memory error Enough memory could not be secured.	Terminate other application(s) currently running. Check if the system is operating normally. Reboot the system.
78 (4EH)	Time out error during mode setting Mode setting was attempted but failed due to time out.	Restart after checking that the dual-port memory is not overlapping with other board. Hardware fault.
79 (4FH)	S/W setting data error Incorrect data was found in the argument parameter when setting S/W.	Check the argument parameter of S/W setting data.
80 (50H)	Unsuccessful mapping of common memory address.	Check if the common address is overlapping with other I/F board.
81 (51H)	Channel response error at source (When a SEND request is issued) Received an abnormal response to the SEND request.	Retry. Check if the system is operating normally. Reboot the system.
85 (55H)	Channel number error (during RECV request) A channel number error.	Check the channel number used during the RECV request.
100 (64H)	Accessing host board An access request was issued to the host board while the host board is being accessed.	Retry.
101 (65H)	Routing parameter error The routing parameter is not set.	Correct the routing parameter.
102 (66H)	Data transmission error Data transmission has failed.	Retry. Check if the system is operating normally. Reboot the system.

Return value (HEX)	Error definition	Corrective action
103 (67H)	Data receiving error Data receiving has failed.	Retry. Check if the system is operating normally. Reboot the system.
129 (81H)	Device type error The specified device type is invalid.	Check the device type.
130 (82H)	Device number error The specified device number is out of range. When specifying the bit device, the device number is not a multiple of 8.	Check the device number.
131 (83H)	Device points error The specified number of points is out of device range. When specifying the bit device, the device number is not a multiple of 8.	Check the size.
132 (84H)	Number of bytes written error The specified number of bytes written is out of range.	Set a number of bytes written that is within the range.
133 (85H)	Link parameter error The link parameter is corrupt. The total number of slave station is 0.	Reset the link parameter.
136 (88H)	Random write specification error A value other than 0 through 2 was specified for random write.	Set a new value between 0 and 2.
215 (D7H)	Reception data length error The length of reception data or byte length is out of range.	Retry. Check the cable.
	Request data buffer length over The length of request data is out of request data area.	Reduce the request data size.
216 (D8H)	Protocol error The communication procedure is abnormal. The requested code does not exist.	Check the cable.
217 (D9H)	Address error The address is out of access range.	Check the request data.
219 (DBH)	Write error Unable to write.	Check the request data.
224 (E0H)	PC number error The destination station does not exist.	Correct the station number.
225 (E1H)	Processing mode error A processing code that cannot be processed by the destination ACPU was set. (It is checked by the destination ACPU.)	Check the destination ACPU and processing code.
226 (E2H)	Special module specification error The specified special module is not a module that can be processed.	Correct the Y number.
227 (E3H)	Other data error Incorrect data was found in the address, head step or shift value of the request data.	Correct the request data.
228 (E4H)	Link specification error A processing code that cannot be processed by the destination station was set. (It is checked by the destination link module.)	Check the destination station number and processing code.
232 (E8H)	Remote error The keyword did not match for the remote RUN/STOP/PAUSE request. Check the destination station number and processing code.	Check the destination station number and processing code.
233 (E9H)	Link time over The destination disconnected the link while processing.	Check the hardware of the special module.
234 (EAH)	Special module BUSY Either the receive buffer is full at the destination due to transmission of general data, or preparation for receiving data has not been completed.	Check the hardware of the special module.
236 (ECH)	Destination BUSY Either the receive buffer is full at the destination due to transmission of general data, or preparation for receiving data has not been completed.	Execute the request when the destination can receive data.
240 (F0H)	Link error A request was issued to a disconnected link station.	Return the link.
241 (F1H)	Special module bus error Processing preparation has not been completed for the specified special module.	Check the hardware of the special module.

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Return value (HEX)	Error definition	Corrective action
242 ($F2_H$)	Special module time over No response from the specified special module.	Check the hardware of the special module.
	No response from the MELSECNET (II) board.	Check the hardware of the MELSECNET (II) board.
1280 (500_H)	Host board memory access error	Check the switch setting on the host board and move the memory address to the area that is not effected by other board. Change the memory access setting to 16 bit if it is set to 8 bit.
1281 (501_H)	Unable to access I/O port	Check the I/O port address setting. Perform a board self-loopback test and check the hardware.
4110 ($100E_H$)	DLL non-load error	Exit the program and restart the PC. Setup the package again. Consult with the dealer regarding the problem.
8204 ($200C_H$)	Request cancel	
8205 ($200D_H$)	Drive name error	
8206 ($200E_H$)	First step error	
8207 ($200F_H$)	Parameter type error	
8208 (2010_H)	File name error	
8209 (2011_H)	Registering/release/set status error	
8210 (2012_H)	Detailed condition division error	
8211 (2013_H)	Step condition error	
8212 (2014_H)	Bit device condition error	
8213 (2015_H)	Parameter setting error	
8215 (2017_H)	Keyword error	
8216 (2018_H)	Read/write flag error	
8217 (2019_H)	Refresh method error	
8218 ($201A_H$)	Buffer access method error	
8219 ($201B_H$)	Start mode/stop mode error	
8220 ($201C_H$)	Written clock data error	
8221 ($201D_H$)	Online data write error	
8223 ($201F_H$)	Trace time error	
8224 (2020_H)	First I/O number error	
8225 (2021_H)	First address error	
8226 (2022_H)	Pattern error	
8227 (2023_H)	SFC block number error	
8228 (2024_H)	SFC step number error	

Return value (HEX)	Error definition	Corrective action
8229 (2025_H)	Step number error	Exit the program and restart the PC. Setup the package again. Consult with the dealer regarding the problem.
8230 (2026_H)	Data error	
8231 (2027_H)	System data error	
8232 (2028_H)	TC set value number error	
8233 (2029_H)	Clear mode error	
8234 ($202A_H$)	Signal flow error	
8235 ($202B_H$)	Version administration error	
8236 ($202C_H$)	Module has been registered	
8237 ($202D_H$)	PI type error	
8238 ($202E_H$)	PI No error	
8239 ($202F_H$)	PI number error	
8240 (2030_H)	Shift error	
8241 (2031_H)	File type error	
8242 (2032_H)	Specified module error	
8243 (2033_H)	Error check flag error	
8244 (2034_H)	Step RUN-operation error	
8245 (2035_H)	Step RUN data error	
8246 (2036_H)	Step RUN-time error	
8247 (2037_H)	Program RUN inside writing error to E^2ROM	
8248 (2038_H)	Clock data read/write error	
8249 (2039_H)	Trace non-completion	
8250 ($203A_H$)	Registration clearness flag error	
8251 ($203B_H$)	Operation error	
8252 ($203C_H$)	The number of station error	
8253 ($203D_H$)	The number of repeat error	
8254 ($203E_H$)	The acquisition data selection error	
8255 ($203F_H$)	The number of SFC cycle error	
8258 (2042_H)	The scheduled time setting error	
8259 (2043_H)	Function count error	
8260 (2044_H)	System information error	

Return value (HEX)	Error definition	Corrective action
8262 (2046_H)	Function number error	Exit the program and restart the PC. Setup the package again. Consult with the dealer regarding the problem.
8263 (2047_H)	RAM operation error	
8264 (2048_H)	Boot former ROM forwarding failure	
8265 (2049_H)	Boot former transfer mode specification error	
8266 ($204A_H$)	Not enough memory	
8267 ($204B_H$)	Backup drive (former boot drive) ROM error	
8268 ($204C_H$)	Block size error	
8269 ($204D_H$)	RUN-time detaching error	
8270 ($204E_H$)	Module has already registered	
8271 ($204F_H$)	Password registration data full error	
8272 (2050_H)	Password unregistration error	
8273 (2051_H)	Remote password error	
8274 (2052_H)	IP address error	
8275 (2053_H)	Error (argument when requesting) outside time-out value range	
8276 (2054_H)	Instruction cast undetection	
8277 (2055_H)	Trace execution type error	
8278 (2056_H)	Version error	
16386 (4002_H)	A request that cannot be processed was received.	Change the request destination.
16432 (4030_H)	The specified device type does not exist.	Check the specified device type.
16433 (4031_H)	The specified device number is out of range	Check the specified device number.
16448 (4040_H)	The module does not exist.	Do not issue a request that generated an error to the specified special module.
16449 (4041_H)	The number of device points is out of range.	Check the head address and number of access points and access within the existing range.
16450 (4042_H)	Corresponding module error	Check if the specified module is operating normally
16451 (4043_H)	The module does not exist at the specified location.	Check the head I/O number of the specified module.
40577 ($9E81_H$)	Device type error The device type specified for the destination station is invalid. (It is checked by the destination link module).	Check the device type.
40578 ($9E82_H$)	Device number error The device number specified for the destination station is out of range. When specifying the bit device, the device number is not a multiple of 8. (It is checked by the destination link module).	Check the device number.
40579 ($9E83_H$)	Devices points error The number of points specified for the destination station is out of range. When specifying the bit device, the device number is not a multiple of 8. (It is checked by the destination link module).	Check the size.

Return value (HEX)	Error definition	Corrective action
-1 ($FFFF_H$)	Path error The specified path is invalid.	Check the bus that was returned by the mdOpen function.
-2 ($FFFE_H$)	Device number error The specified device number is out of range. When specifying the bit device, the device number is not a multiple of 8.	Check the head device number for the specified device.
-3 ($FFFD_H$)	Device type error The specified device type is invalid.	Check if the device type used is in the device list.
-4 ($FFFC_H$)	CPU error An invalid station was specified.	Check the status of the communication station. Check the specified station number.
-5 ($FFFB_H$)	Size error The device number and size are over the device range. Access was attempted using an odd device. The device number and size are over the range for the same block.	Check the specified device size. Check the device number and size.
-6 ($FFFA_H$)	Number of block error The number of blocks specified in dev[0] for device random read/write is out of range.	Check the number of blocks specified in dev [0].
-8 ($FFF8_H$)	Channel number error The channel number specified in the mdOpen function is invalid.	Check the specified channel number.
-11 ($FFF5_H$)	Insufficient buffer area The read area size of the read data storage array variable is too small.	Check the read size and read data destination size.
-12 ($FFF4_H$)	Block error The specified block number of the extension file register is invalid.	Check the block number (device type) of the extension file register.
-13 ($FFF3_H$)	Write protect error The specified block number of the extension file register is overlapping with the write protect area of the memory cassette.	Check the block number (device type) of the extension file register. Check the write protect DIP switch of the accessed memory cassette.
-14 ($FFF2_H$)	Memory cassette error No memory cassette is loaded to the accessed CPU, or an incorrect memory cassette is loaded.	Check the accessed memory cassette.
-15 ($FFF1_H$)	Read area length error The read area size of the read data storage array variable is too small.	Check the read size and read data destination size.
-16 ($FFF0_H$)	Station number/network number error The station number/network number is out of range.	Check the specified station number/network number
-17 ($FFEF_H$)	All-station/group number specification error A function that does not support all-station specification/group-number specification was specified.	Check if all-station specification/group number specification is enabled for the function.
-18 ($FFEE_H$)	Remote instruction error A code that is not designated was specified.	Check the specified code.
-19 ($FFED_H$)	SEND/RECV channel number error The channel number specified with the SEND/RECV function is out of range.	Check the specified channel number.
-21 ($FFEB_H$)	Error in gethostbyname ( ) An error occurred in the function, gethostbyname ( ).	Check if the specified host name exists in the HOSTS file.
-24 ($FFE8_H$)	Time out error in select ( ) A time out error occurred in the function, select ( ).	Check if MGW server service has been started on the server machine.
-25 ($FFE7_H$)	Error in sendto ( ) An error occurred in the function, sendto ( ).	Check if normal Ethernet communication can be performed with the server machine.
-26 ($FFE6_H$)	Error in recvfrom ( ) An error occurred in the function, recvfrom ( ).	
-28 ($FFE4_H$)	Error response reception An error response was received.	
-29 ($FFE3_H$)	Reception data length over Too much data was received.	
-30 ($FFE2_H$)	Sequence number error The received sequence number is abnormal.	

Return value (HEX)	Error definition	Corrective action
-31 (FFE1H)	DLL load error An attempt to load a DLL, which is necessary to execute the function, has failed.	Setup the package again.
-32 (FFE0H)	Other task/thread is occupying the resource and the resource is not released within 30 seconds.	Retry. There may be a problem of insufficient memory. Terminate other application(s) currently running. Check if the system is operating normally. Reboot the system.
-33 (FFDFH)	Incorrect access destination The setting for the communication destination is incorrect.	Check if the communication destination is correctly set by the utility.
-34 (FFDEH)	Registry error An attempt to open the registry has failed.	
-35 (FFDDH)	Registry read error An attempt to read from the registry has failed.	Check if the communication destination is correctly set by the utility.
-36 (FFDCH)	Registry write error An attempt to write to the registry has failed.	
-37 (FFDBH)	Communication initialization setting error An attempt to perform initial setting for communication has failed.	Retry. There may be a problem of insufficient memory. Terminate other application(s) currently running. Check if the system is operating normally. Reboot the system.
-38 (FFDAH)	Ethernet communication error An attempt to set for Ethernet communication has failed.	Retry. Check if the communication destination is correctly set by the utility. There may be a problem of insufficient memory. Terminate other application(s) currently running. Check if the system is operating normally. Reboot the system.
-39 (FFD9H)	COM communication setting error An attempt to set for COM communication has failed.	
-41 (FFD7H)	COM control error Control cannot be performed properly during COM communication.	Retry. Check if the system is operating normally. Reboot the system.
-42 (FFD6H)	Close error Communication cannot be closed.	
-43 (FFD5H)	ROM operation error A TC setting value was written to the CPU during ROM operation.	Change the TC setting value during RAM operation.
-44 (FFD4H)	LLT communication setting error An attempt to set for LLT communication has failed.	Retry. Check if the communication destination is correctly set by the utility. There may be a problem of insufficient memory. Terminate other application(s) currently running.
-45 (FFD3H)	Ethernet control error Control cannot be performed properly during Ethernet communication.	Retry. Check if the system is operating normally.
-46 (FFD2H)	USB open error Failed to initialize and open the USB port.	There may be a problem of insufficient memory. Terminate other application (s) currently running. Check if the system is operating normally. Reboot the system.
-47 (FFD1H)	Random read condition disable error The random read condition is not enabled and random read cannot be performed.	A conditional random read has been set via a switch such as GX Developer. Wait until the condition is enabled. Alternatively, cancel the condition.
-48 (FFD0H)	TEL error.	Exit the program and restart the PC. Setup the package again. Consult with the dealer regarding the problem.
-50 (FFCEH)	Opened path maximum value over The number of open paths exceeds the maximum value (32).	Close several paths.
-51 (FFCDH)	Exclusive control error An error occurred in the exclusive control.	Retry. Check if the system is operating normally.
-2174 (F782H)	Destination station number specification error The destination station number for the processing request is specifying the host.	Check the destination station number.
-16386 to -20222 (B102H to BFFEH)	See CC-Link system master/local module user's manual.	Same as left.

Return value (HEX)	Error definition	Corrective action
-18558 ($B782_H$)	Request destination station number specification error The local station number was specified as the station number of the processing request destination station.	Review the correct request destination station number.
-18560 ($B780_H$)	Transient was issued to the remove I/O.	Check the destination station to request.
-18575 ($B771_H$)	A device for other station only was accessed to the host.	Check the device type.
-24957 ($9E83_H$)	Device points error The number of points specified for the destination station is out of device range. When specifying the bit device, the device number is not a multiple of 8. (It is checked by the destination link module.)	Check the size.
-24958 ($9E82_H$)	Device number error The device number specified for the destination station is out of range. When specifying the bit device, the device number is not a multiple of 8. (It is checked by the destination link module.)	Check the device number.
-24959 ($9E81_H$)	Device type error The device type specified for the destination station is invalid. (It is checked by the destination link module.)	Check the device type.
-25056 ($9E29_H$)	Processing code error A processing code that cannot be processed by the destination station was set. (It is checked by the destination link module.)	Check the destination station number and processing code.
-26333 (9923_H)	The ROM version of the CC-Link board does not match the QCPU (Q mode).	Access a CPU other than the QCPU (Q mode). Use the CC-Link board supplied with the module (ROM version: "W" or later) after the SW3DNF-CCLINK.
-26334 (9922_H)	Board reset error Other process has executed a board reset using the same channel while other station is being accessed.	Retry.
-26336 (9920_H)	Request error for other loop Routing to other loop was performed.	Change the routing destination to AnUCPU or QnACPU.
-28150 ($920A_H$)	Data link disconnecting error	A host link device was accessed while the data link is being disconnected.
-28151 (9209_H)	APS No. error. An incorrect response data was received.	Change the equipment at the process request destination.
-28156 (9204_H)	Dual-port hand-shake error	Remove other optional board.
-28158 (9202_H)	WDT error	Reset the board. Reboot the PC. Take the measures for WDT error occurrence. (Refer to Section 11.6.)

11 TROUBLESHOOTING

This chapter describes how to determine the cause of trouble that may occur during system construction as well as appropriate corrective actions.

11.1 When Performing Troubleshooting

Ideally occurrence of trouble should be kept to a minimum in order to startup the system effectively. However, once an error occurs, it is important that we identify the cause as quickly as possible.
The followings are the three basic points that must be kept in mind when performing troubleshooting.

(1) Visual check

Check the following points.

1) Movement of the external device (status when stopped or during operation)
2) On/off status of power supply
3) Wiring condition (cable)
4) LED display status (power supply display LED)
5) Checks whether the PC is one suitable for the operating environment

After checking 1) through 5), connect the external device and check the operation of the user program.

(2) Confirming the error

Examine how the error status changes by the following operation.

1) Change the input status and check if the change can be read correctly using the test program.
2) Repeat on/off of output and check if the status of the external device changes accordingly.

(3) Narrowing the range

Based on the steps 1) and 2) above, deduce the range of error location as one of the following.

1) PC side or external device side
2) PC main body or board
3) Cable
4) User program

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11.2 Troubleshooting Table by the Type of Error Occurring

When trouble occurs, refer to the methods in Table 11.1 for determining the cause of the trouble.

Table 11.1 Troubleshooting table by the type of error occurring

No.	[Error content]	[Cause determination method]
1	A CC-Link board did not operate normally upon startup.	See the flowchart found in Section 11.3 for when the board and PC do not operate.
2	There was no data linking although the master station and other station were connected to the CC-Link board.	See the flowchart found in Section 11.4 for when the data link could be completed.
3	When an error occurs during the data link 1) An unexpected value is entered in the special device. 2) The device is being accessed using a function in the user program, but data cannot be read or written. 3) Communication stops occasionally while the user program is executing. 4) The system goes down (blue screen) or resets while the user program is executing in operating system.	See the flowchart found in Section 11.5 for when an error occurs during data linking.

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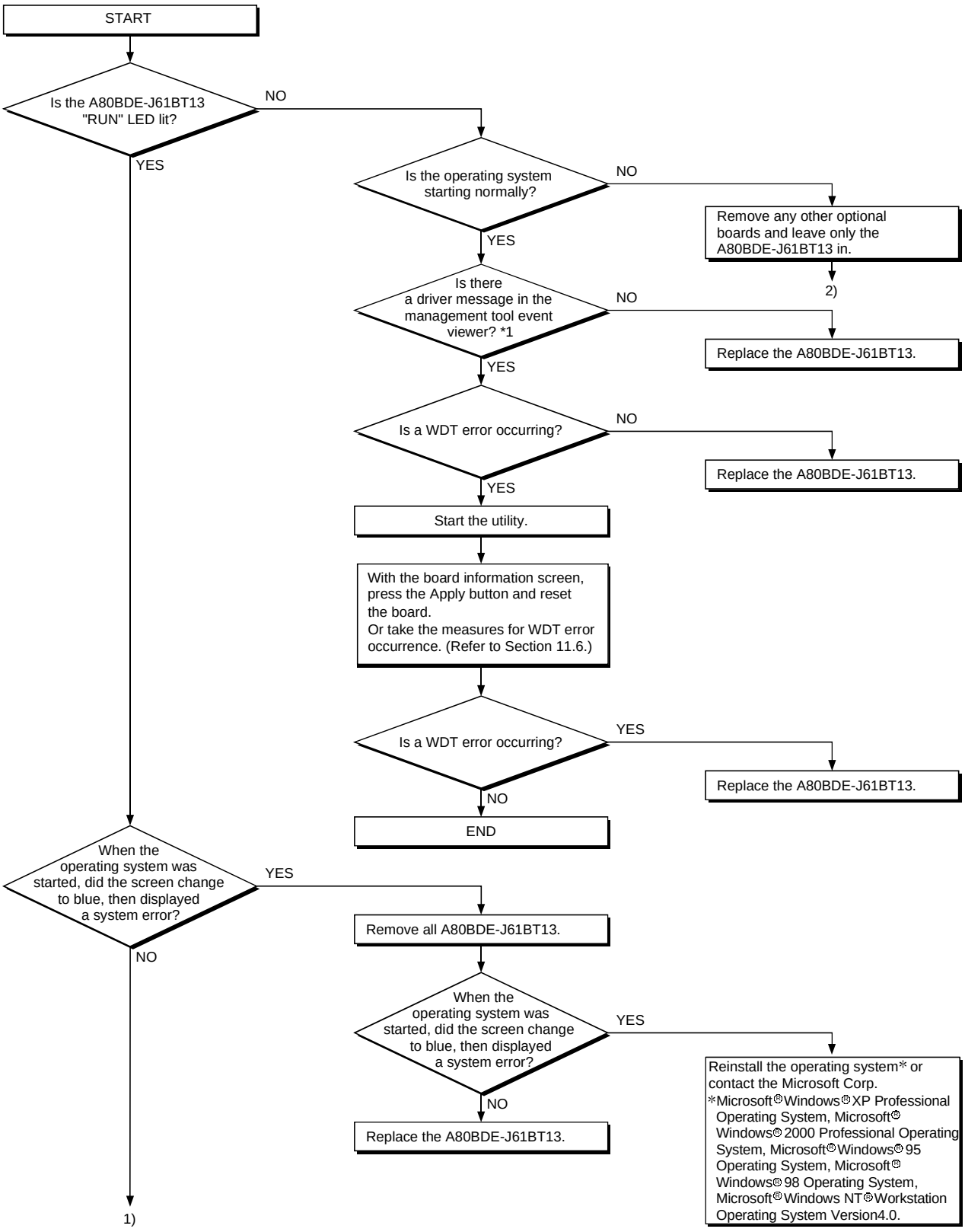
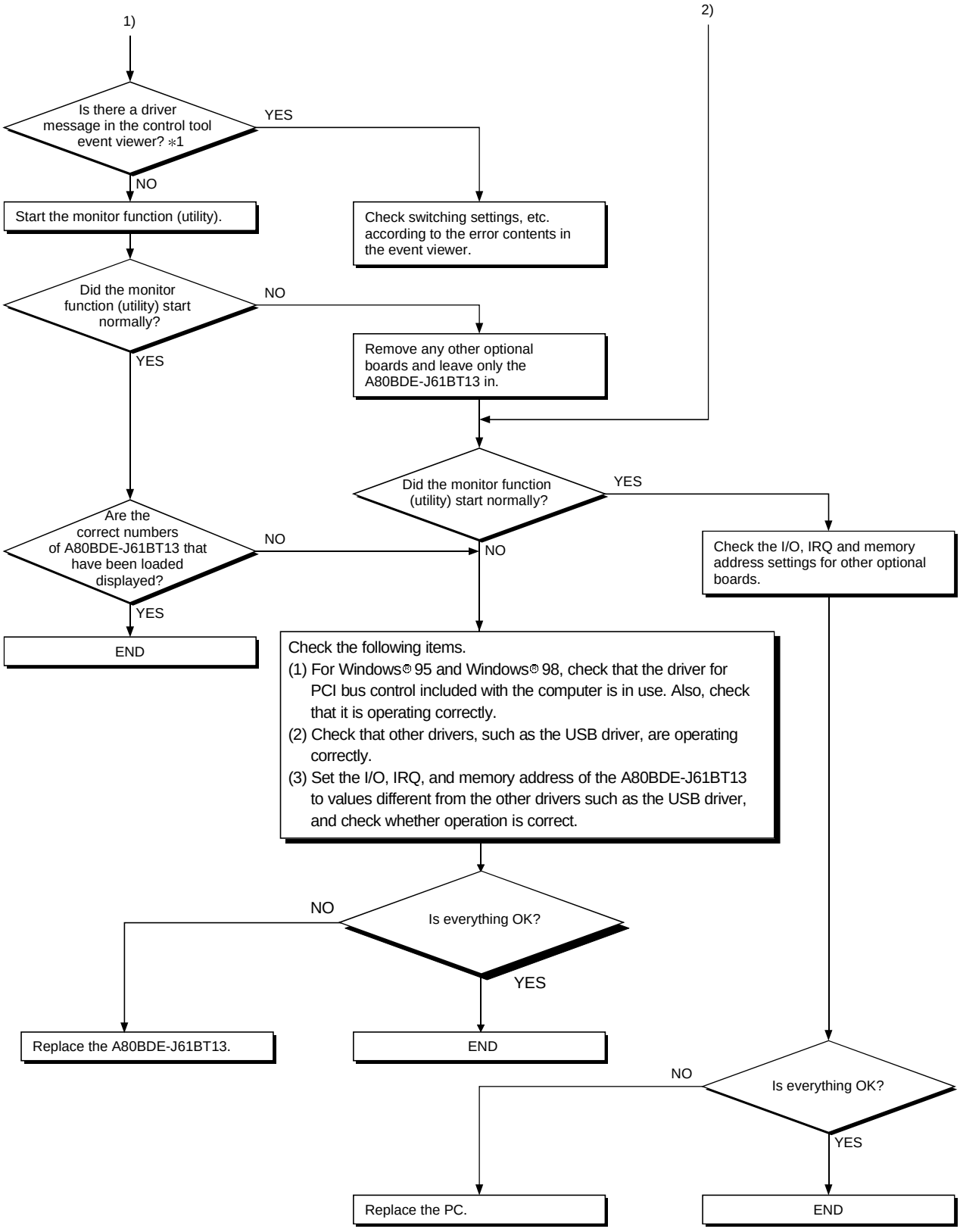
11.3 Flowchart to Use when the Board or PC do not Operate

The following indicates a check procedure in the PC unit when the CC-Link board does not run normally during startup.


START
Is the A80BDE-J61BT13 "RUN" LED lit?
NO
YES
Is the operating system starting normally?
NO
Remove any other optional boards and leave only the A80BDE-J61BT13 in.
2)
YES
Is there a driver message in the management tool event viewer? *1
NO
Replace the A80BDE-J61BT13.
YES
Is a WDT error occurring?
NO
Replace the A80BDE-J61BT13.
YES
Start the utility.
With the board information screen, press the Apply button and reset the board.
Or take the measures for WDT error occurrence. (Refer to Section 11.6.)
Is a WDT error occurring?
YES
Replace the A80BDE-J61BT13.
NO
END
When the operating system was started, did the screen change to blue, then displayed a system error?
YES
Remove all A80BDE-J61BT13.
NO
When the operating system was started, did the screen change to blue, then displayed a system error?
YES
Reinstall the operating system* or contact the Microsoft Corp.
*Microsoft® Windows® XP Professional Operating System, Microsoft® Windows® 2000 Professional Operating System, Microsoft® Windows® 95 Operating System, Microsoft® Windows® 98 Operating System, Microsoft® Windows NT® Workstation Operating System Version4.0.
NO
Replace the A80BDE-J61BT13.
1)


1)
2)
Is there a driver message in the control tool event viewer? ∗1
YES
NO
Start the monitor function (utility).
Check switching settings, etc. according to the error contents in the event viewer.
Did the monitor function (utility) start normally?
NO
YES
Remove any other optional boards and leave only the A80BDE-J61BT13 in.
Did the monitor function (utility) start normally?
YES
NO
Are the correct numbers of A80BDE-J61BT13 that have been loaded displayed?
NO
YES
Check the I/O, IRQ and memory address settings for other optional boards.
END
Check the following items.
(1) For Windows® 95 and Windows® 98, check that the driver for PCI bus control included with the computer is in use. Also, check that it is operating correctly.
(2) Check that other drivers, such as the USB driver, are operating correctly.
(3) Set the I/O, IRQ, and memory address of the A80BDE-J61BT13 to values different from the other drivers such as the USB driver, and check whether operation is correct.
Is everything OK?
NO
YES
Replace the A80BDE-J61BT13.
END
Is everything OK?
NO
YES
Replace the PC.
END

∗1 : With Windows® 95 and Windows® 98, check the driver message in the error viewer.

11.3.1 Table of error event messages that may occur during driver startup

The table below lists the errors displayed in the event viewer/error viewer.

Event ID (HEX)	Error content	Corrective action
256 (100H)	The driver could not be executed because an error occurred during driver startup.	Reinstall the driver package. If the error occurs again, reinstall operating system.
257 (101H)	The CC-Link board could not be detected.	Check the installation status of the CC-Link board.
258 (102H)	No response from hardware.	Replace the CC-Link board.
259 (103H)	The number of boards detected exceeds the maximum number that can be loaded.	Remove boards until the number falls within the maximum limit.
262 (106H)	An attempt to link the device name has failed.	Reinstall operating system.
268 (10CH)	An error occurred during receiving process. (The request packet is incorrect).	Check the PC and PLC program for which the processing is being requested to this PC.
269 (10DH)	An error occurred during transmission process.	
279 (117H)	An error occurred when writing to the registry.	1) This error occurs when the CC-Link board driver is installed first. Install SW4DNF-CCLINK-B, then restart the PC to confirm that this error does not occur. 2) Increase the system memory and disk capacities.
280 (118H)	A request that cannot be processed was received from other station. (A request for which a response request cannot be processed was received)	Check the PC and PLC program for which the processing is being requested to this PC.
282 (11AH)	Mapping of the I/O port has failed.	The I/O port is overlapping with another resource. Remove other optional boards.
283 (11BH)	The shared memory area of the CC-Link board is overlapping with other hardware.	Remove other optional boards.
284 (11CH)	The CC-Link board IRQ is overlapping with other hardware.	Remove other optional boards.
285 (11DH)	It is possible the CC-Link board will not operate normally, since it detected a temperature abnormality.	Install the PC in a location with a suitable temperature.
286 (11EH)	Failed to secure the memory area required to start the driver.	Increase system memory.
288 (120H)	A WDT error occurred.	Remove other optional boards. Take the measures for WDT error occurrence. (Refer to Section 11.6.)
289 (121H)	Handshaking with the shared memory area has failed.	Reset the board. If the error occurs again, replace the board.
290 (122H)	The board number of the CC-Link board is a duplicate.	Reset so there are no duplicate board numbers.
291 (123H)	Failed in mapping the shared memory area.	Remove other optional boards.
293 (125H)	Interrupt registration has failed.	Remove other optional boards.
294 (126H)	The I/O port for the CC-Link board is overlapping with other hardware.	Remove other optional boards. *1

Event ID (HEX)	Error content			Corrective action
1281 (501H)	Initialization of the CC-Link board has failed.	DUMP value	Error contents (details)	————————
		01h	There is no response from the hardware.	Replace the CC-Link board.
		02h	The IRQ or memory is overlapping. ∗2	Remove other optional boards.
		03h	There is no response from the hardware.	Replace the CC-Link board.
		04h	Handshaking with the shared memory area has failed.	Restart. If the error occurs again, replace the board.
		66h	There is no response from the hardware.	Replace the CC-Link board.

DUMP value • • • Value of the 1 byte at the head of the data contents details area

∗1 : If this event error occurs in the Windows® 2000 Professional, Windows® XP Professional or Windows NT® Workstation 4.0 event viewer, restart the PC that has the BIOS setup shown below after setting the "Plug & Play O/S" in [No] and "Reset Configuration Data" in [Yes] as in the following example.

Example)
BIOS Setup Utility

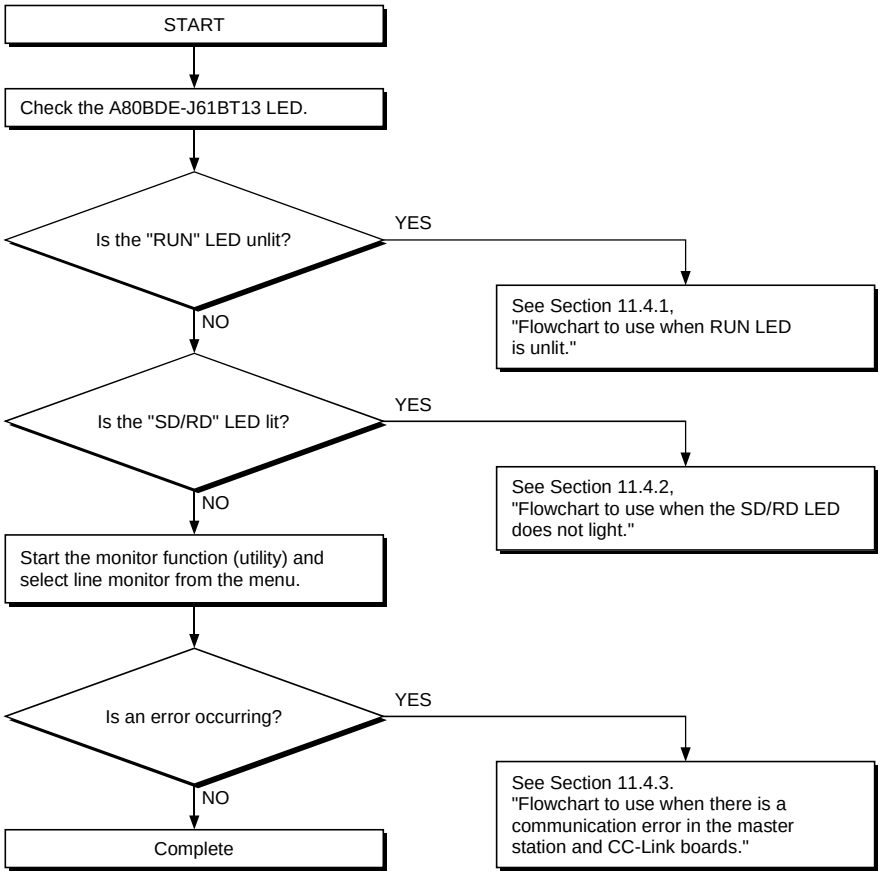
Set Plug & Play O/S : [YES] → [No]
Reset Configuration Data : [No] → [YES]

Then restart.

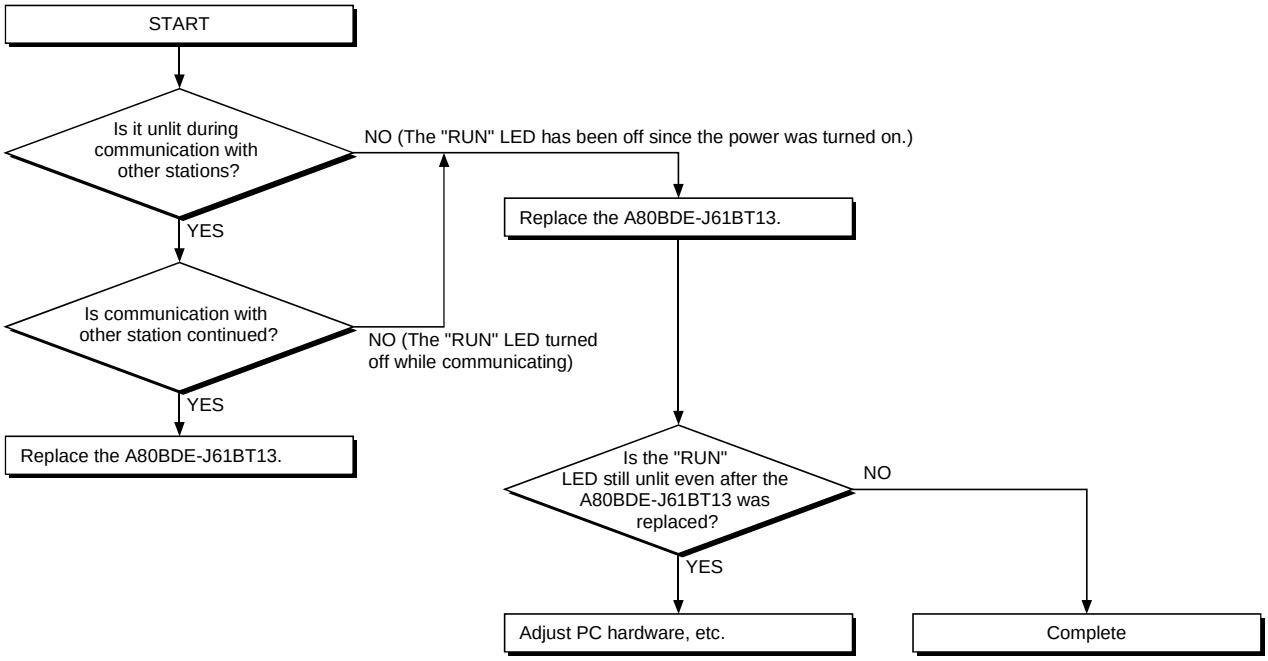
∗2 : This event error may occur when the PCI bus controller is not operating correctly. When the PC being used comes pre-installed with Windows® 95, Windows® 98, use the drivers for Windows 95/98 and the PCI bus controller that come in the PC unit.
If Windows® 95, Windows® 98 have been purchased separately, obtain the drivers for the PCI bus controller suggested by the PC manufacturer and install.

11.4 Flowchart to Use when the Data Link could not be Completed

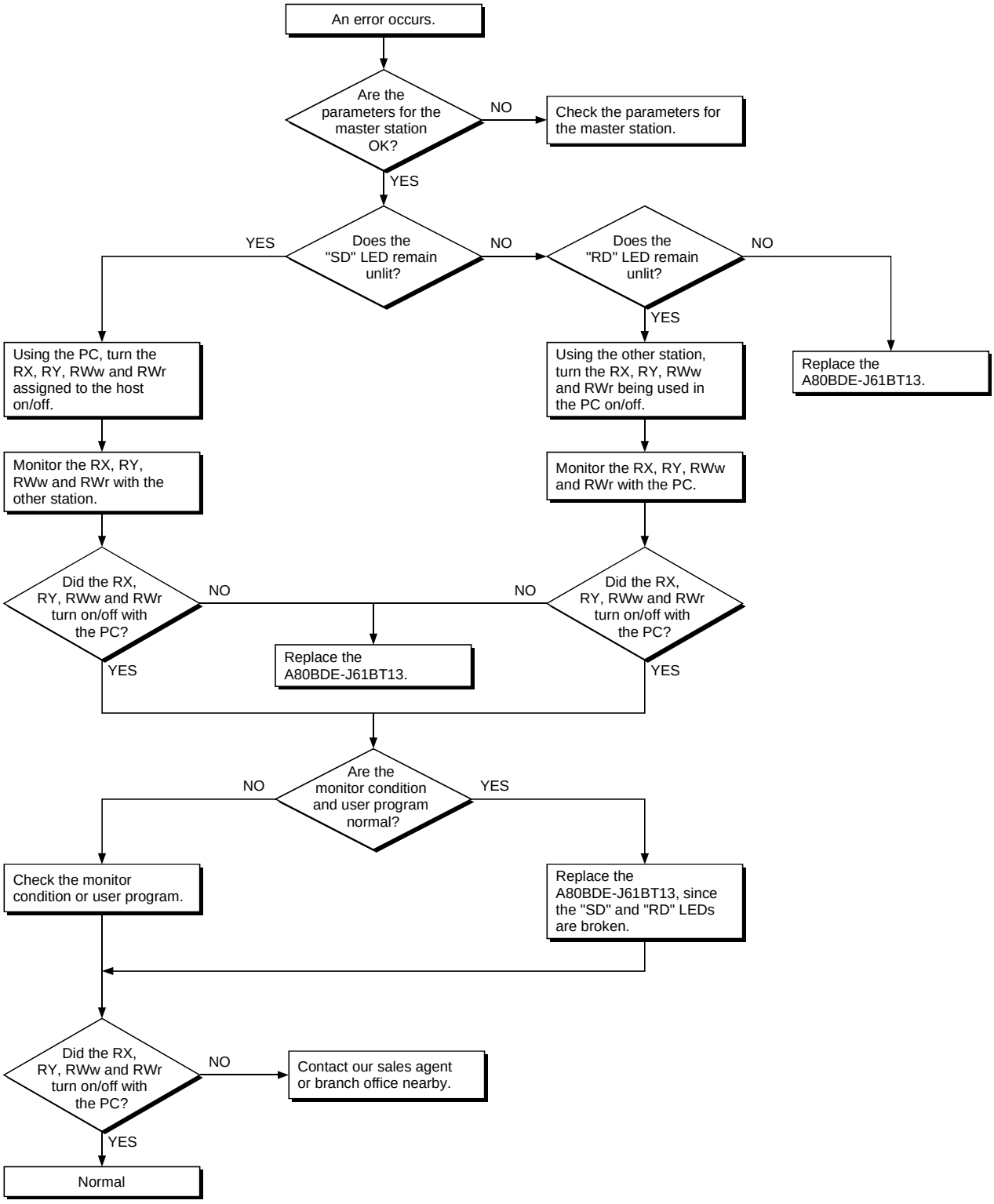
The following flowchart indicates when the data link could not be completed even though the CC-Link board was connected to another station.


START
Check the A80BDE-J61BT13 LED.
Is the "RUN" LED unlit?
YES
See Section 11.4.1, "Flowchart to use when RUN LED is unlit."
NO
Is the "SD/RD" LED lit?
YES
See Section 11.4.2, "Flowchart to use when the SD/RD LED does not light."
NO
Start the monitor function (utility) and select line monitor from the menu.
Is an error occurring?
YES
See Section 11.4.3. "Flowchart to use when there is a communication error in the master station and CC-Link boards."
NO
Complete

11.4.1 Flowchart to use when RUN LED is unlit


START
Is it unlit during communication with other stations?
NO (The "RUN" LED has been off since the power was turned on.)
Replace the A80BDE-J61BT13.
YES
Is communication with other station continued?
NO (The "RUN" LED turned off while communicating)
YES
Replace the A80BDE-J61BT13.
Is the "RUN" LED still unlit even after the A80BDE-J61BT13 was replaced?
NO
YES
Adjust PC hardware, etc.
Complete

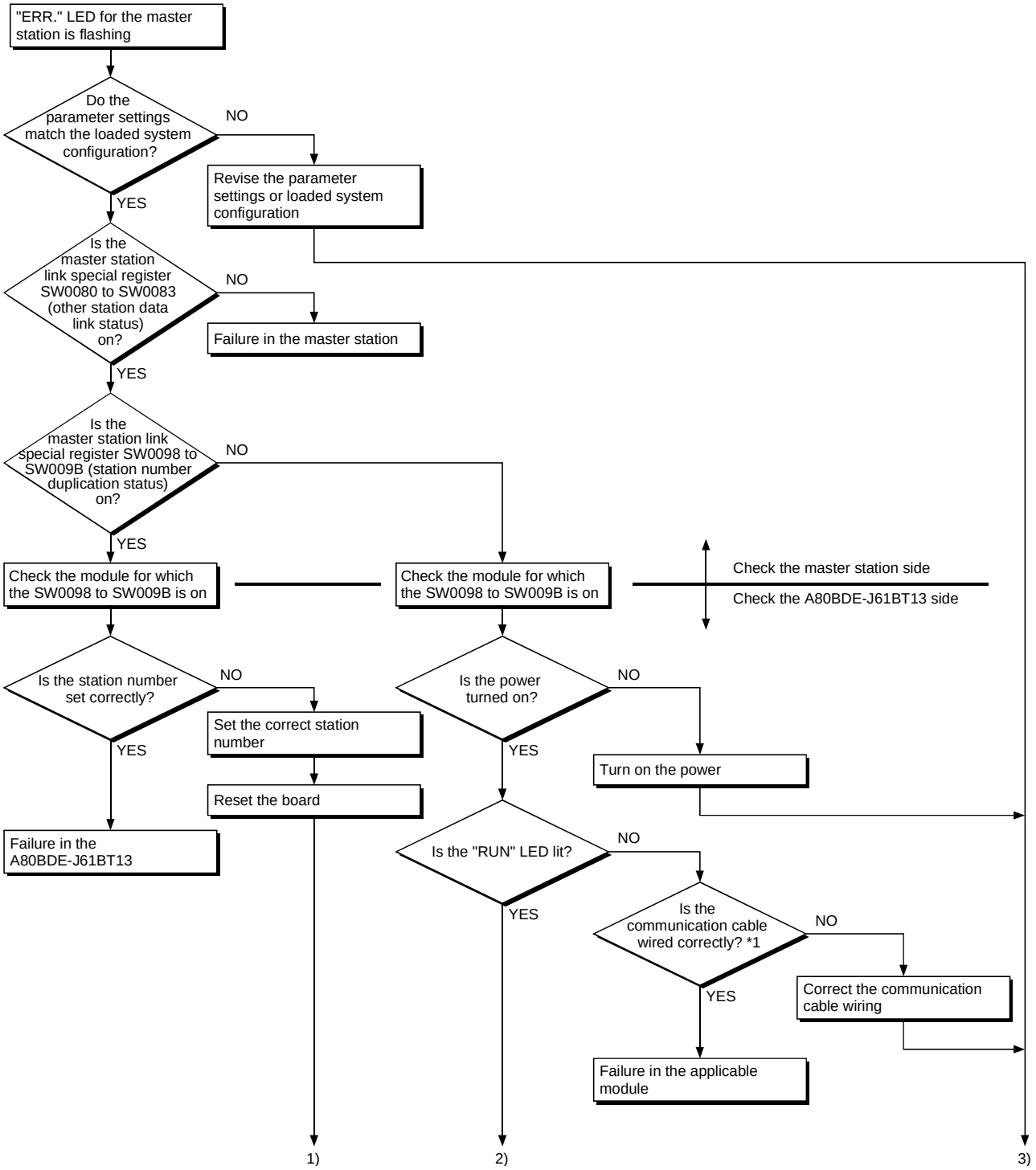
11.4.2 Flowchart to use when SD/RD LED does not turn on

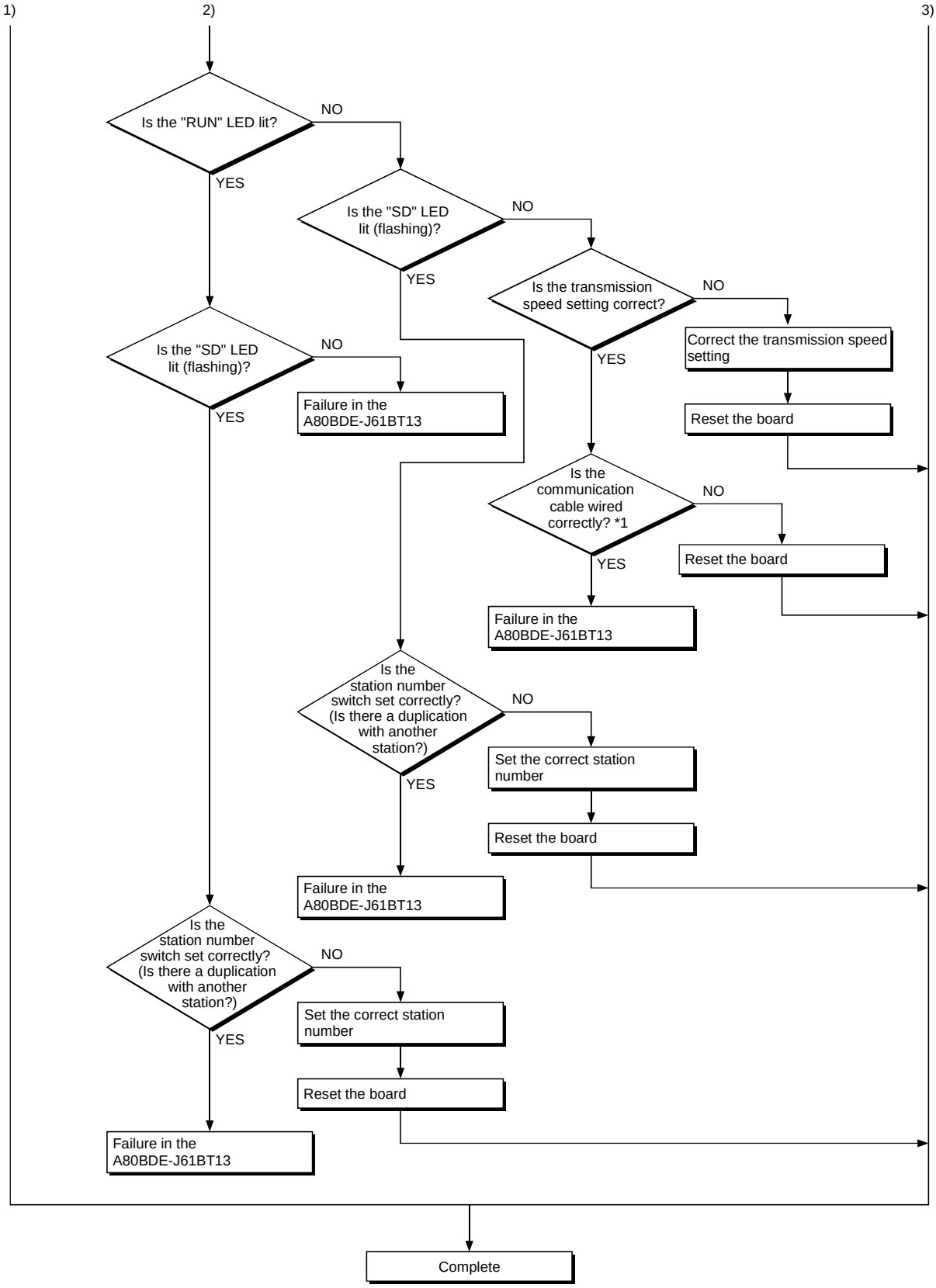

An error occurs.
Are the parameters for the master station OK?
NO
Check the parameters for the master station.
YES
Does the "SD" LED remain unlit?
YES
NO
Does the "RD" LED remain unlit?
NO
YES
Using the PC, turn the RX, RY, RWw and RWr assigned to the host on/off.
Using the other station, turn the RX, RY, RWw and RWr being used in the PC on/off.
Replace the A80BDE-J61BT13.
Monitor the RX, RY, RWw and RWr with the other station.
Monitor the RX, RY, RWw and RWr with the PC.
Did the RX, RY, RWw and RWr turn on/off with the PC?
NO
NO
Did the RX, RY, RWw and RWr turn on/off with the PC?
Replace the A80BDE-J61BT13.
YES
YES
Are the monitor condition and user program normal?
NO
YES
Check the monitor condition or user program.
Replace the A80BDE-J61BT13, since the "SD" and "RD" LEDs are broken.
Did the RX, RY, RWw and RWr turn on/off with the PC?
NO
Contact our sales agent or branch office nearby.
YES
Normal

11.4.3 Flowchart to use when there is a communication error between the master station and CC-Link board

When a station number duplicate bit turns on in the link special register SW0098 to SW009B (station number duplicate status), check the CC-Link board of the relevant station number using the following procedure.

Troubleshooting flowchart when the "ERR." LED for the master station is flashing

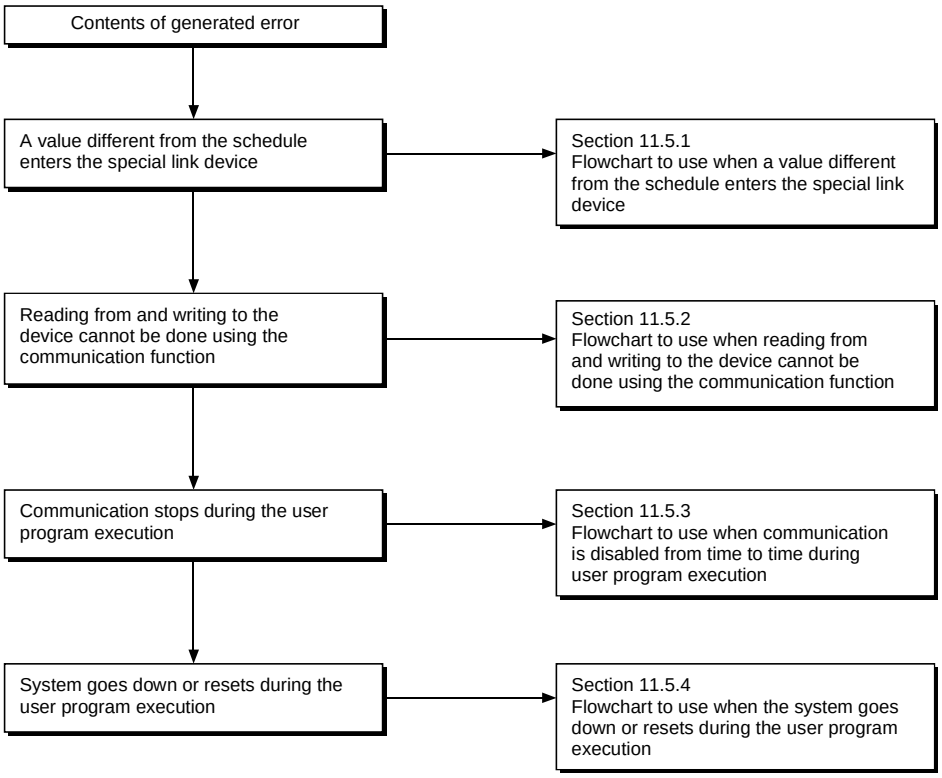

"ERR." LED for the master station is flashing
Do the parameter settings match the loaded system configuration?
NO
Revise the parameter settings or loaded system configuration
YES
Is the master station link special register SW0080 to SW0083 (other station data link status) on?
NO
Failure in the master station
YES
Is the master station link special register SW0098 to SW009B (station number duplication status) on?
NO
YES
Check the module for which the SW0098 to SW009B is on
Check the module for which the SW0098 to SW009B is on
Check the master station side
Check the A80BDE-J61BT13 side
Is the station number set correctly?
NO
Set the correct station number
Reset the board
YES
Failure in the A80BDE-J61BT13
Is the power turned on?
NO
Turn on the power
YES
Is the "RUN" LED lit?
NO
YES
Is the communication cable wired correctly? *1
NO
Correct the communication cable wiring
YES
Failure in the applicable module
1)
2)
3)



*1 : Check for shorts, reversed connection, broken connection, terminal resistor, FG connection, total extended distance, and distance between stations

11.5 Flowchart to Use when an Error Occurs During Data Linking

The following flowchart indicates when an error occurs during data linking is shown.

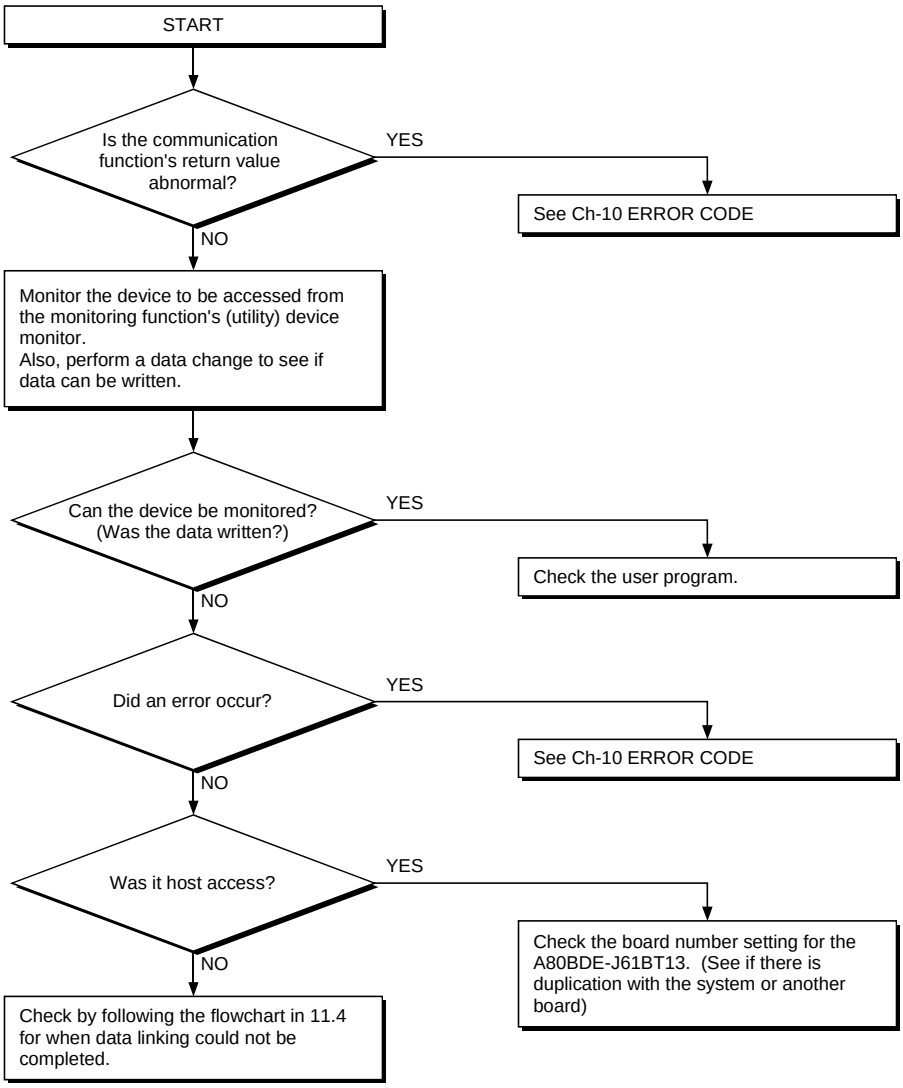

Contents of generated error
A value different from the schedule enters the special link device
Section 11.5.1 Flowchart to use when a value different from the schedule enters the special link device
Reading from and writing to the device cannot be done using the communication function
Section 11.5.2 Flowchart to use when reading from and writing to the device cannot be done using the communication function
Communication stops during the user program execution
Section 11.5.3 Flowchart to use when communication is disabled from time to time during user program execution
System goes down or resets during the user program execution
Section 11.5.4 Flowchart to use when the system goes down or resets during the user program execution

11.5.1 Flowchart to use when unexpected value is input to specific link device

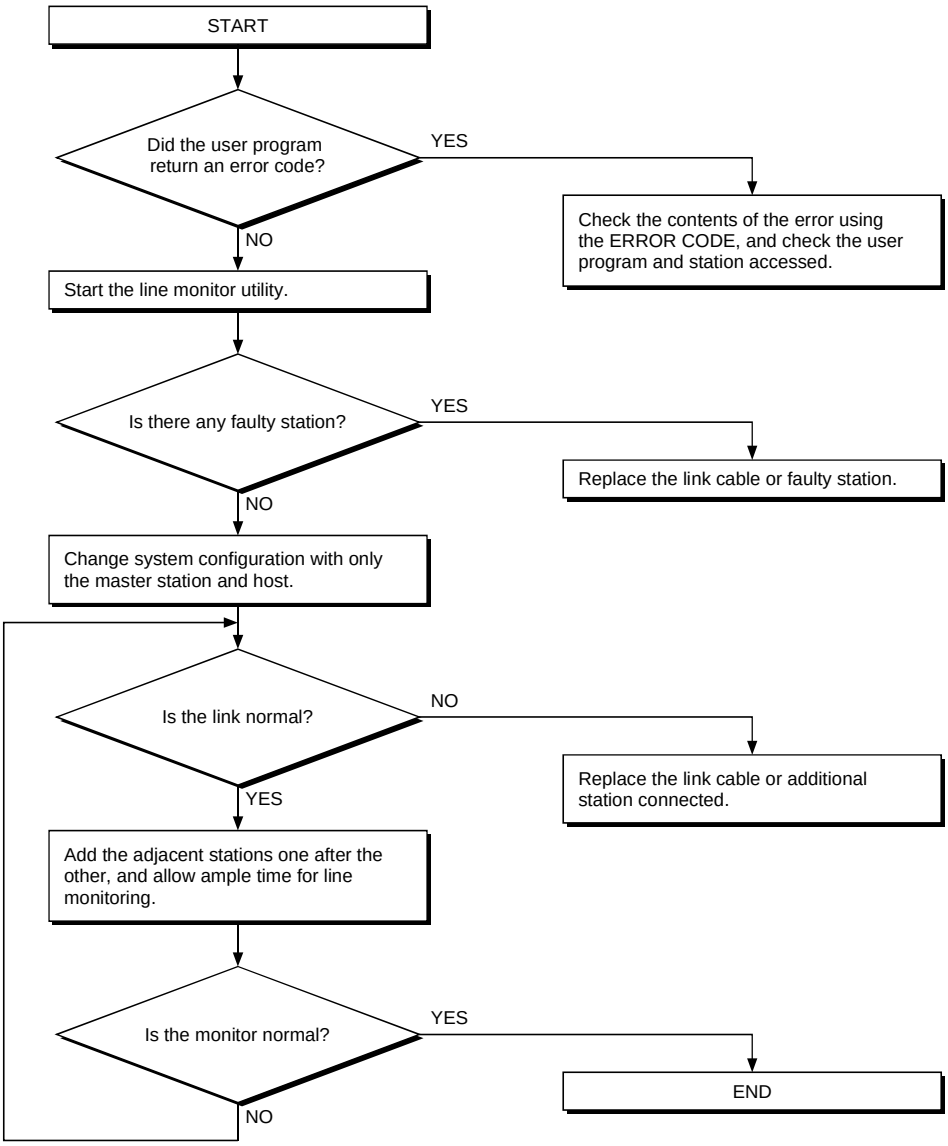
Check the following items.

1) Check for a station with link error using the network monitor in the monitoring function.
2) Check the link parameter assignment range at the master station.
3) Check the device range used in the PLC program at the PLC.
4) Check, in the user program, argument data for the communication function accessing the specific link device.

11.5.2 Flowchart to use when reading from and writing to the device cannot be done using the communication function


START
Is the communication function's return value abnormal?
YES
See Ch-10 ERROR CODE
NO
Monitor the device to be accessed from the monitoring function's (utility) device monitor.
Also, perform a data change to see if data can be written.
Can the device be monitored? (Was the data written?)
YES
Check the user program.
NO
Did an error occur?
YES
See Ch-10 ERROR CODE
NO
Was it host access?
YES
Check the board number setting for the A80BDE-J61BT13. (See if there is duplication with the system or another board)
NO
Check by following the flowchart in 11.4 for when data linking could not be completed.

11.5.3 Flowchart to use when communication is disabled from time to time during user program execution


START
Did the user program return an error code?
YES
Check the contents of the error using the ERROR CODE, and check the user program and station accessed.
NO
Start the line monitor utility.
Is there any faulty station?
YES
Replace the link cable or faulty station.
NO
Change system configuration with only the master station and host.
Is the link normal?
NO
Replace the link cable or additional station connected.
YES
Add the adjacent stations one after the other, and allow ample time for line monitoring.
Is the monitor normal?
YES
END
NO

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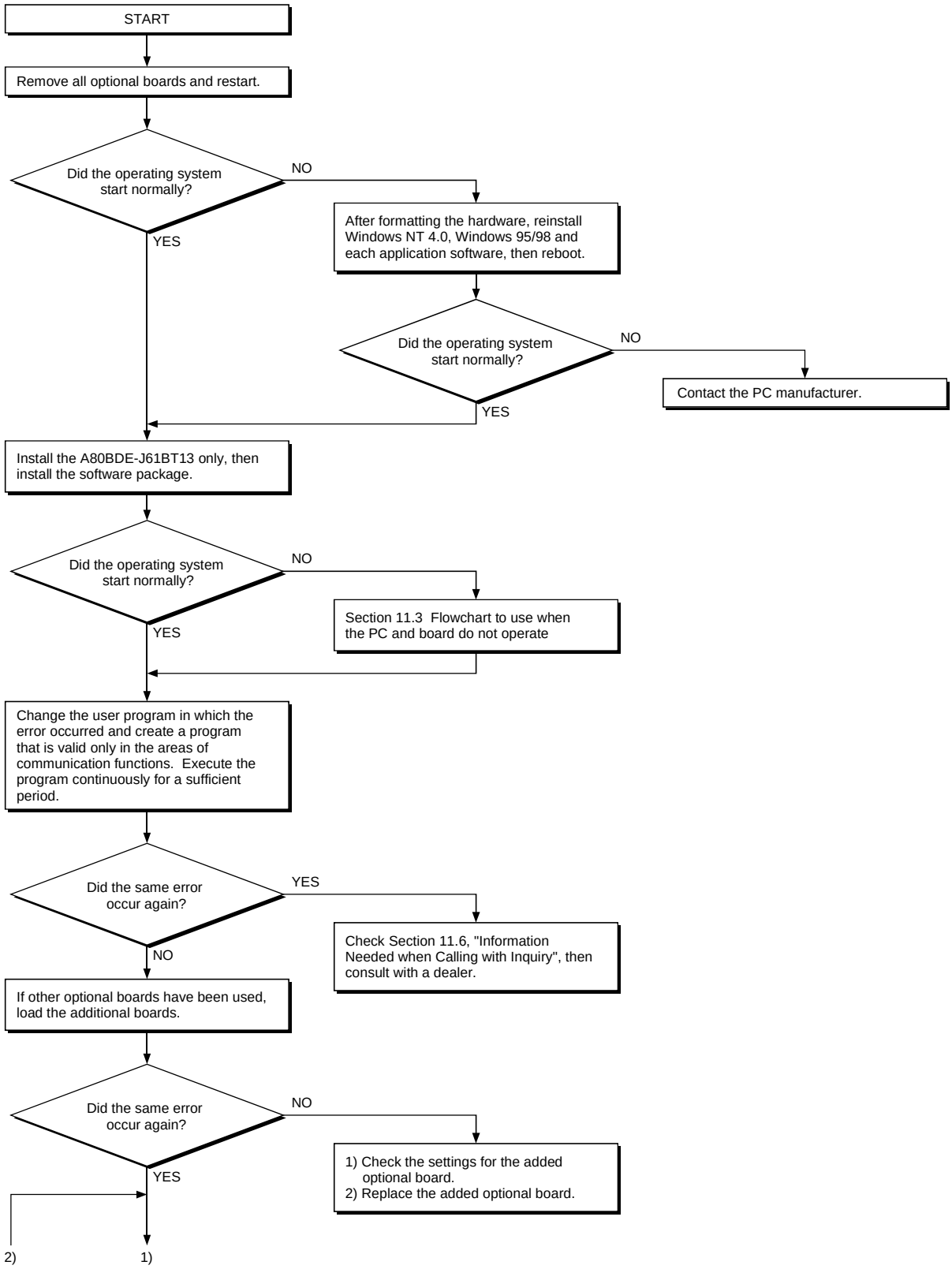
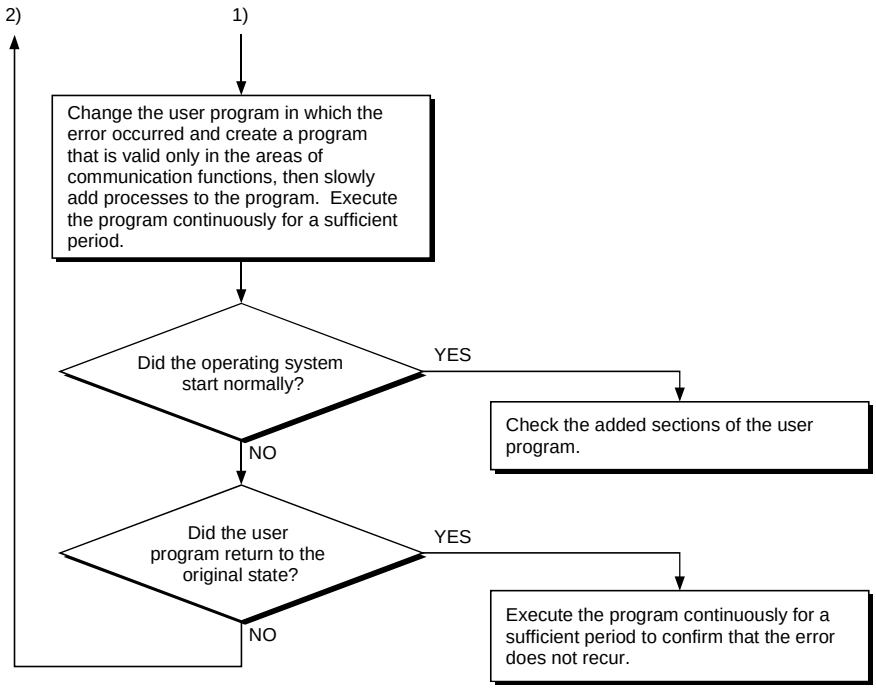
11.5.4 Flowchart to use when the system goes down or resets during the user program execution


START
Remove all optional boards and restart.
Did the operating system start normally?
NO
YES
After formatting the hardware, reinstall Windows NT 4.0, Windows 95/98 and each application software, then reboot.
Did the operating system start normally?
NO
YES
Contact the PC manufacturer.
Install the A80BDE-J61BT13 only, then install the software package.
Did the operating system start normally?
NO
YES
Section 11.3 Flowchart to use when the PC and board do not operate
Change the user program in which the error occurred and create a program that is valid only in the areas of communication functions. Execute the program continuously for a sufficient period.
Did the same error occur again?
YES
NO
Check Section 11.6, "Information Needed when Calling with Inquiry", then consult with a dealer.
If other optional boards have been used, load the additional boards.
Did the same error occur again?
NO
YES
1) Check the settings for the added optional board.
2) Replace the added optional board.
2)
1)


2)
1)
Change the user program in which the error occurred and create a program that is valid only in the areas of communication functions, then slowly add processes to the program. Execute the program continuously for a sufficient period.
Did the operating system start normally?
YES
Check the added sections of the user program.
NO
Did the user program return to the original state?
YES
Execute the program continuously for a sufficient period to confirm that the error does not recur.
NO

11.6 Measures for WDT error occurrence

The following explains the causes of WDT error occurrence in CC-Link board and measures for them.

(1) Cause of WDT error occurrence

The WDT error occurs in CC-Link board as follows:

1) CC-Link driver cannot operate because the PC or OS is hang up.
2) The CPU cannot start to control the CC-Link driver within the WDT time, as the other drive has occupied the CPU processing.

In case 2), the WDT time has to be adjusted, as affected by the operation of the PC or other driver.
For details, refer to (2).

(2) Adjusting WDT Time

The following explains adjusting the WDT time.
The screens of Windows® XP Professional are used in the explanation.
Therefore, the screens and file names to be executed are slightly different from those of other operating systems. Adjust the WDT time with reference to REMARK.

1) Insert Disk 6 into the floppy disk drive.

2) Open [Start] → [All Programs] → [Accessories] → [Command Prompt].

REMARK

When Windows® 95, Windows® 98 or Windows NT® Workstation 4.0 is used, open [Start] → [Programs] → [MS-DOS Prompt].
When Windows® 2000 Professional is used, open [Start] → [Programs] → [Command Prompt].

↓
(To the next page)

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(From the previous page)

↓

3) Execute WDTSETNE.exe.
Enter "A:\Tools\WDTSETNT.exe", and then press the Enter key.

REMARK

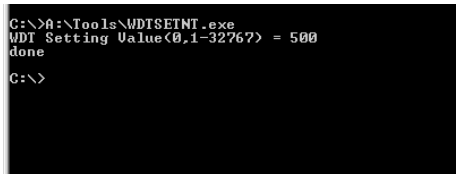
Above enter example is relevant to Windows NT® Workstation 4.0 and Windows® 2000 Professional or Windows® XP Professional. When Windows® 95 or Windows® 98 is used, enter "A:\Tools\WDTSET95.exe", and then press the Enter key.

↓

4) As the message shown left is displayed, enter in "WDT Setting Value" the value large enough to avoid WDT error, and then press the Enter key. (Setting range: 1 to 32767)

WDT time is defined by the value set to "WDT Setting Value" as shown below.
(WDT time) = (Value set as "WDT Setting Value") × 8ms.
"WDT Setting Value" is factory-set to "300".
If "WDT Setting Value" is set to "0" and the Enter key is pressed, the currently set value will be displayed.

↓



5) When "done" is displayed after the above setting, this means the setting operation is completed. End the command prompt and restart the personal computer.

REMARK

If "ERROR" is displayed, reinstall the software package or operating system.

↓

(Complete)

POINT
If WDT error still occurs after the above operations reset "WDT Setting Value". (Enter the value larger than previous setting.)

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11.7 Information Needed when Calling with Inquiry

The following conditions and status must be reported when calling us with an inquiry regarding a damaged board.

(1) Error state (be specific)
Example) The system does not start during the startup process after turning on the power, displaying a "board Not response" message.

(2) PC manufacturer, PC name/model

(3) Main memory capacity, hard disk capacity, CPU model

(4) OS name : Windows® XP Professional, Windows® 2000 Professional or other

(5) Position of installation slot, number of boards installed

(6) Use of optional boards made by other companies.

(7) When optional boards made by other companies are installed, have the following items for each board available.
- Board model
- Board manufacturer
- Memory address (head address and occupied size)
- I/O address (head address and occupied size)
- IRQ number, DMA number

(8) Whether a comparison check in another PC has been done

(9) Switch setting

(10) Details of the CC-Link driver error registered in the event viewer (for Windows® XP Professional, Windows® 2000 Professional, Windows NT® Workstation 4.0) or the error viewer (for Windows® 95, Windows® 98)

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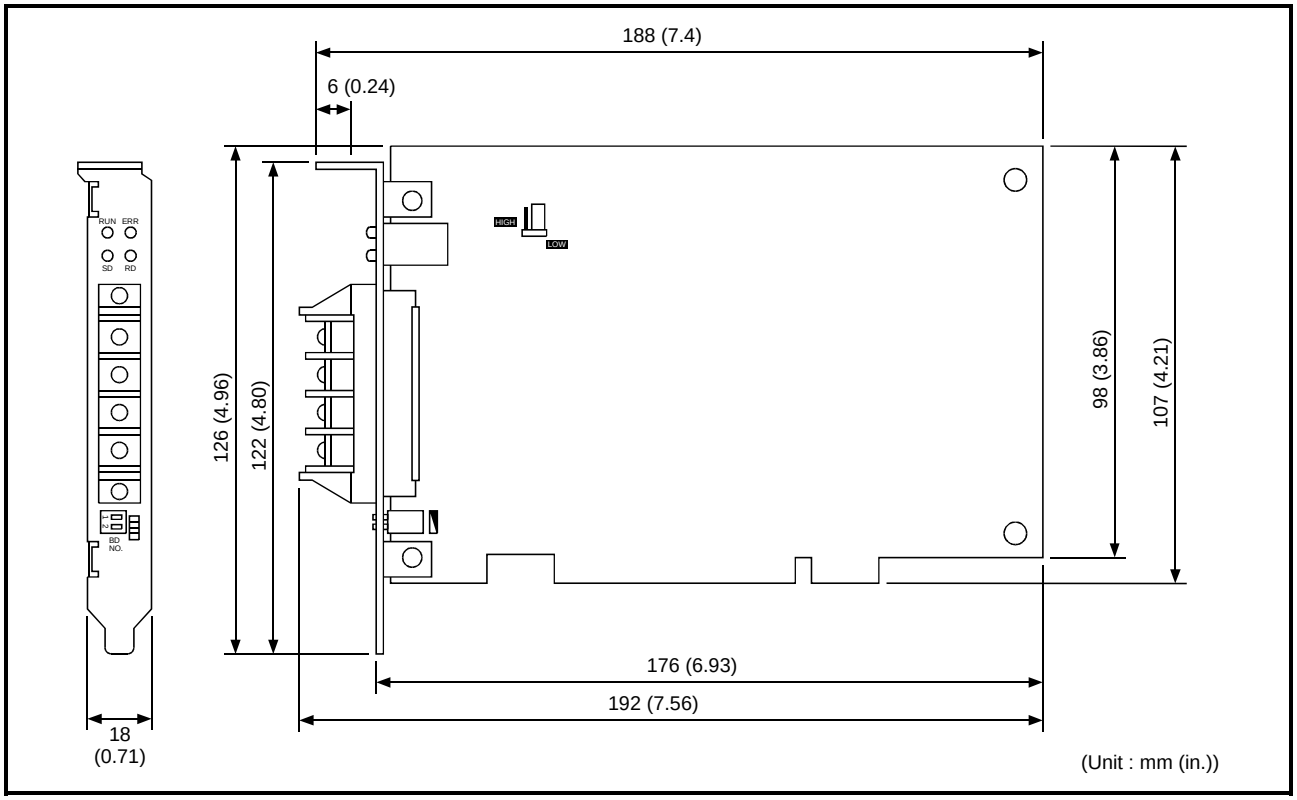
APPENDIX

Appendix 1 External Dimensions



App

App - 1

MEMO

App - 2

WARRANTY

Please confirm the following product warranty details before starting use.

1. Gratis Warranty Term and Gratis Warranty Range

If any faults or defects (hereinafter "Failure") found to be the responsibility of Mitsubishi occurs during use of the product within the gratis warranty term, the product shall be repaired at no cost via the dealer or Mitsubishi Service Company. Note that if repairs are required at a site overseas, on a detached island or remote place, expenses to dispatch an engineer shall be charged for.

[Gratis Warranty Term]

The gratis warranty term of the product shall be for one year after the date of purchase or delivery to a designated place.

Note that after manufacture and shipment from Mitsubishi, the maximum distribution period shall be six (6) months, and the longest gratis warranty term after manufacturing shall be eighteen (18) months. The gratis warranty term of repair parts shall not exceed the gratis warranty term before repairs.

[Gratis Warranty Range]

(1) The range shall be limited to normal use within the usage state, usage methods and usage environment, etc., which follow the conditions and precautions, etc., given in the instruction manual, user's manual and caution labels on the product.

(2) Even within the gratis warranty term, repairs shall be charged for in the following cases.

1. Failure occurring from inappropriate storage or handling, carelessness or negligence by the user. Failure caused by the user's hardware or software design.
2. Failure caused by unapproved modifications, etc., to the product by the user.
3. When the Mitsubishi product is assembled into a user's device, Failure that could have been avoided if functions or structures, judged as necessary in the legal safety measures the user's device is subject to or as necessary by industry standards, had been provided.
4. Failure that could have been avoided if consumable parts (battery, backlight, fuse, etc.) designated in the instruction manual had been correctly serviced or replaced.
5. Failure caused by external irresistible forces such as fires or abnormal voltages, and Failure caused by force majeure such as earthquakes, lightning, wind and water damage.
6. Failure caused by reasons unpredictable by scientific technology standards at time of shipment from Mitsubishi.
7. Any other failure found not to be the responsibility of Mitsubishi or the user.

2. Onerous repair term after discontinuation of production

(1) Mitsubishi shall accept onerous product repairs for seven (7) years after production of the product is discontinued. Discontinuation of production shall be notified with Mitsubishi Technical Bulletins, etc.

(2) Product supply (including repair parts) is not possible after production is discontinued.

3. Overseas service

Overseas, repairs shall be accepted by Mitsubishi's local overseas FA Center. Note that the repair conditions at each FA Center may differ.

4. Exclusion of chance loss and secondary loss from warranty liability

Regardless of the gratis warranty term, Mitsubishi shall not be liable for compensation to damages caused by any cause found not to be the responsibility of Mitsubishi, chance losses, lost profits incurred to the user by Failures of Mitsubishi products, damages and secondary damages caused from special reasons regardless of Mitsubishi's expectations, compensation for accidents, and compensation for damages to products other than Mitsubishi products and other duties.

5. Changes in product specifications

The specifications given in the catalogs, manuals or technical documents are subject to change without prior notice.

6. Product application

(1) In using the Mitsubishi MELSEC programmable logic controller, the usage conditions shall be that the application will not lead to a major accident even if any problem or fault should occur in the programmable logic controller device, and that backup and fail-safe functions are systematically provided outside of the device for any problem or fault.

(2) The Mitsubishi general-purpose programmable logic controller has been designed and manufactured for applications in general industries, etc. Thus, applications in which the public could be affected such as in nuclear power plants and other power plants operated by respective power companies, and applications in which a special quality assurance system is required, such as for Railway companies or National Defense purposes shall be excluded from the programmable logic controller applications.

Note that even with these applications, if the user approves that the application is to be limited and a special quality is not required, application shall be possible.

When considering use in aircraft, medical applications, railways, incineration and fuel devices, manned transport devices, equipment for recreation and amusement, and safety devices, in which human life or assets could be greatly affected and for which a particularly high reliability is required in terms of safety and control system, please consult with Mitsubishi and discuss the required specifications.

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HEADQUARTERS

MITSUBISHI ELECTRIC EUROPE B.V. — EUROPE
Gothaer Straße 8
D-40880 Ratingen
Phone: +49 (0) 21 02 / 486-0
Fax: +49 (0) 21 02 / 4 86-11 20
e mail: megfamail@meg.mee.com

MITSUBISHI ELECTRIC EUROPE B.V. — FRANCE
25, Boulevard des Bouvets
F-92741 Nanterre Cedex
Phone: +33 1 55 68 55 68
Fax: +33 1 55 68 56 85
e mail: factory.automation@fra.mee.com

MITSUBISHI ELECTRIC EUROPE B.V. — UK
Travellers Lane
GB-Hatfield Herts. AL10 8 XB
Phone: +44 (0) 1707 / 27 61 00
Fax: +44 (0) 1707 / 27 86 95

MITSUBISHI ELECTRIC EUROPE B.V. — ITALY
Via Paracelso 12
I-20041 Agrate Brianza (MI)
Phone: +39 039 6053 1
Fax: +39 039 6053 312
e mail: factory.automation@it.mee.com

MITSUBISHI ELECTRIC EUROPE B.V. — SPAIN
Carretera de Rubí 76-80
E-08190 Sant Cugat del Vallés
Phone: +34 9 3 / 565 3131
Fax: +34 9 3 / 589 2948
e mail: industrial@sp.mee.com

MITSUBISHI ELECTRIC CORPORATION — JAPAN
Office Tower "Z" 14 F
8-12,1 chome, Harumi Chuo-Ku
Tokyo 104-6212
Phone: +81 3 6221 6060
Fax: +81 3 6221 6075

MITSUBISHI ELECTRIC AUTOMATION — USA
500 Corporate Woods Parkway
Vernon Hills, IL 60061
Phone: +1 847 / 478 21 00
Fax: +1 847 / 478 22 83

EUROPEAN REPRESENTATIVES

GEVA — AUSTRIA
Wiener Straße 89
A-2500 Baden
Phone: +43 (0) 2252 / 85 55 20
Fax: +43 (0) 2252 / 488 60
e mail: office@geva.at

TEHNIKON — BELARUS
Oktjabrskaya 16/5, Ap 704
BY-220030 Minsk
Phone: +375 (0) 17 / 22 75 704
Fax: +375 (0) 17 / 22 76 669
e mail: tehnikon@belsonet.net

Getronics b.v. Control Systems — BELGIUM
Pontbeeklaan 43
B-1731 Asse-Zellik
Phone: +32 (0) 2 / 467 17 51
Fax: +32 (0) 2 / 467 17 45
e mail: infoautomation@getronics.com

TELECON CO. — BULGARIA
4, A. Ljapchev Blvd.
BG-1756 Sofia
Phone: +359 (0) 2 / 97 44 05 8
Fax: +359 (0) 2 / 97 44 06 1
e mail: —

INEA CR d.o.o. — CROATIA
Drvinje 63
HR-10000 Zagreb
Phone: +385 (0) 1 / 36 67 140
Fax: +385 (0) 1 / 36 67 140
e mail: —

AutoCont Control Systems s.r.o. — CZECHIA
Nemocnicni 12
CZ-702 00 Ostrava 2
Phone: +420 59 / 6152 111
Fax: +420 59 / 6152 562
e mail: consys@autocont.cz

louis poulsen industri & automation — DENMARK
Geminivej 32
DK-2670 Greve
Phone: +45 (0) 43 / 95 95 95
Fax: +45 (0) 43 / 95 95 91
e mail: lpia@lpmail.com

UTU Elektrotehnika AS — ESTONIA
Pärnu mnt.160i
EE-11317 Tallinn
Phone: +372 (0) 6 / 51 72 80
Fax: +372 (0) 6 / 51 72 88
e mail: utu@utu.ee

Beijer Electronics OY — FINLAND
Ansatie 6a
FIN-01740 Vantaa
Phone: +358 (0) 9 / 886 77 500
Fax: +358 (0) 9 / 886 77 555
e mail: info@beijer.fi

PROVENDOR OY — FINLAND
Teljänkatu 8 A 3
FIN-28130 Pori
Phone: +358 (0) 2 / 522 3300
Fax: +358 (0) 2 / 522 3322
e mail: —

UTECO A.B.E.E. — GREECE
5, Mavrogenous Str.
GR-18542 Piraeus
Phone: +302 (0) 10 / 42 10 050
Fax: +302 (0) 10 / 42 12 033
e mail: uteco@uteco.gr

Meltrade Automatika Kft. — HUNGARY
55, Harmat St.
H-1105 Budapest
Phone: +36 (0)1 / 2605 602
Fax: +36 (0)1 / 2605 602
e mail: office@meltrade.hu

EUROPEAN REPRESENTATIVES

MITSUBISHI ELECTRIC EUROPE B.V. – Irish Branch — IRELAND
Westgate Business Park
IRL-Dublin 24
Phone: +353 (0) 1 / 419 88 00
Fax: +353 (0) 1 / 419 88 90
e mail: sales.info@meir.mee.com

SIA POWEL — LATVIA
Lienes iela 28
LV-1009 Riga
Phone: +371 784 / 22 80
Fax: +371 784 / 22 81
e mail: utu@utu.lv

UAB UTU POWEL — LITHUANIA
Savanoriu pr. 187
LT-2053 Vilnius
Phone: +370 (0) 52323-101
Fax: +370 (0) 52322-980
e mail: powel@utu.lt

INTEHSIS SRL — MOLDOVA, REPUBLIC OF
Cuza-Voda 36/1-81
MD-2061 Chisinau
Phone: +373 (0)2 / 562 263
Fax: +373 (0)2 / 562 263
e mail: intehsis@mdl.net

Getronics b.v. Control Systems — NETHERLANDS
Donauweg 2 B
NL-1043 AJ Amsterdam
Phone: +31 (0) 20 / 587 67 00
Fax: +31 (0) 20 / 587 68 39
e mail: info.gia@getronics.com

Beijer Electronics AS — NORWAY
Teglverksveien 1
N-3002 Drammen
Phone: +47 (0) 32 / 24 30 00
Fax: +47 (0) 32 / 84 85 77
e mail: info@beijer.no

MPL Technology Sp. z o.o. — POLAND
ul. Sliczna 36
PL-31-444 Kraków
Phone: +48 (0) 12 / 632 28 85
Fax: +48 (0) 12 / 632 47 82
e mail: krakow@mpl.pl

Sirius Trading & Services srl — ROMANIA
Bd. Lacul Tei nr. 1 B
RO-72301 Bucuresti 2
Phone: +40 (0) 21 / 201 7147
Fax: +40 (0) 21 / 201 7148
e mail: sirius_t_s@fx.ro

ACP Autocomp a.s. — SLOVAKIA
Chalupkova 7
SK-81109 Bratislava
Phone: +421 (02) / 5292-22 54, 55
Fax: +421 (02) / 5292-22 48
e mail: info@acp-autocomp.sk

INEA d.o.o. — SLOVENIA
Stegne 11
SI-1000 Ljubljana
Phone: +386 (0) 1-513 8100
Fax: +386 (0) 1-513 8170
e mail: inea@inea.si

Beijer Electronics AB — SWEDEN
Box 426
S-20124 Malmö
Phone: +46 (0) 40 / 35 86 00
Fax: +46 (0) 40 / 35 86 02
e mail: info@beijer.se

ECONOTEC AG — SWITZERLAND
Postfach 282
CH-8309 Nürensdorf
Phone: +41 (0) 1 / 838 48 11
Fax: +41 (0) 1 / 838 48 12
e mail: info@econotec.ch

EUROPEAN REPRESENTATIVES

GTS — TURKEY
Darülaceze Cad. No. 43 KAT: 2
TR-80270 Okmeydani-Istanbul
Phone: +90 (0) 212 / 320 1640
Fax: +90 (0) 212 / 320 1649
e mail: gts@turk.net

CSC Automation Ltd. — UKRAINE
15, M. Raskova St., Fl. 10, Office 1010
UA-02002 Kiev
Phone: +380 (0) 44 / 238-83-16
Fax: +380 (0) 44 / 238-83-17
e mail: csc-a@csc-a.kiev.ua

AFRICAN REPRESENTATIVE

CBI Ltd — SOUTH AFRICA
Private Bag 2016
ZA-1600 Isando
Phone: +27 (0) 11/ 928 2000
Fax: +27 (0) 11/ 392 2354
e mail: cbi@cbi.co.za

MIDDLE EAST REPRESENTATIVE

TEXEL Electronics LTD. — ISRAEL
Box 6272
IL-42160 Netanya
Phone: +972 (0) 9 / 863 08 91
Fax: +972 (0) 9 / 885 24 30
e mail: texel_me@netvision.net.il

EURASIAN REPRESENTATIVE

AVTOMATIKA SEVER — RUSSIA
Krapivnij Per. 5, Of. 402
RU-194044 St Petersburg
Phone: +7 812 / 1183 238
Fax: +7 812 / 3039 648
e mail: pav@avtsev.spb.ru

CONSYS — RUSSIA
Promyshlennaya St. 42
RU-198099 St Petersburg
Phone: +7 812 / 325 36 53
Fax: +7 812 / 325 36 53
e mail: consys@consys.spb.ru

ELEKTROSTYLE — RUSSIA
Ul Garschina 11
RU-140070 Moscowskaja Oblast
Phone: +7 095/ 261 3808
Fax: +7 095/ 261 3808
e mail: —

ICOS — RUSSIA
Industrial Computer Systems Zao
Ryazanskij Prospekt 8a, Office 100
RU-109428 Moscow
Phone: +7 095 / 232 - 0207
Fax: +7 095 / 232 - 0327
e mail: mail@icos.ru

NPP Uralelektra — RUSSIA
Sverdlova 11a
RU-620027 Ekaterinburg
Phone: +7 34 32 / 53 27 45
Fax: +7 34 32 / 53 27 45
e mail: elektra@etel.ru

STC Drive Technique — RUSSIA
Poslannikov Per. 9, str.1
RU-107005 Moscow
Phone: +7 095 / 786 21 00
Fax: +7 095 / 786 21 01
e mail: info@privod.ru